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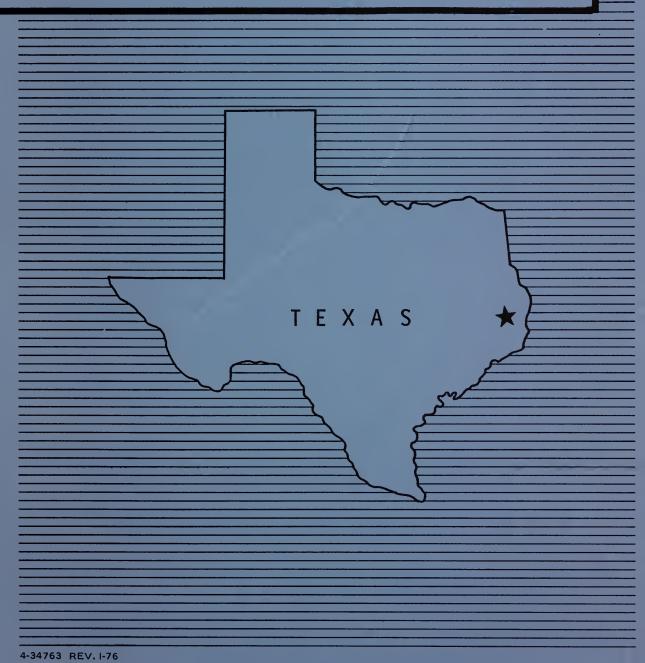


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FINAL ENVIRONMENTAL IMPACT STATEMENT USDA-SCS-EIS-WS-(ADM)-75-3 (F) TX

SANDY CREEK WATERSHED PROJECT

JASPER COUNTY, TEXAS



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USDA-SCS-EIS-WS-(ADM)-75-3-(F)-TX

SANDY CREEK WATERSHED PROJECT

JASPER COUNTY, TEXAS

FINAL ENVIRONMENTAL IMPACT STATEMENT

Edward E. Thomas, State Conservationist Soil Conservation Service

MATIONAL DEPT. OF AGRICULTURE

JUL 3 C 1976

CATALOGING PREP.

Sponsoring Local Organizations:

Jasper-Newton Soil and Water Conservation District
County Courthouse Annex
Jasper, Texas 75951

Upper Jasper County Water Authority
P.O. Box 308
Jasper, Texas 75951

City of Jasper Jasper Municipal Building Jasper, Texas 75951

September 1975

PREPARED BY

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Temple, Texas 76501



USDA ENVIRONMENTAL IMPACT STATEMENT

The Sandy Creek Watershed Project Jasper County, Texas

Prepared in Accordance with Sec. 102(2)(C) of P.L. 91-190

SUMMARY

- I. Final
- II. Soil Conservation Service
- III. Administrative

IV. Description of Action:

A plan for watershed protection and flood prevention for the 39.06 square miles (25,000 acres) drainage area of the Sandy Creek watershed in Jasper County, Texas, will be carried out by the sponsoring local organizations with assistance from the Soil Conservation Service, USDA, under the authority of Public Law 566, 83rd Congress, 68 Stat. 666, as amended. The plan provides for additional land treatment measures on about 5,500 acres, six floodwater retarding structures, and 2.9 miles of floodway to be constructed in the watershed during a five-year installation period.

- V. Summary of Environmental Impact and Adverse Environmental Effects:
 - 1. The installation of the planned land treatment measures will exceed 90 percent of the soil and water conservation measures needed to reduce erosion and retard runoff.
 - 2. The owners and occupants of 40 residential units, 30 business units, and 15 owners and operators of agricultural land will be affected by reduced flooding hazards.
 - 3. Damage reduction will be provided for 1,095 acres of flood plain.
 - 4. Flood-free protection from a 100-year event will be provided to all existing urban improvements except one house and several streets and utility crossings.
 - 5. Damages to urban properties from a 100-year event will be reduced over 99 percent, road and bridge damages outside the urban area 83 percent, and pasture damages 25 percent.
 - 6. Costs associated with interruption or delay of travel due to flooding, rerouting of school buses and mail routes, disruption of farming and forestry operations, business losses, etc. will be greatly reduced or eliminated.
 - 7. Hazards to life from floodwater will be virtually eliminated.
 - 8. Costs necessary for evacuation, emergency shelter, and relief operations for residents in flood prone areas will be to all intents and purposes eliminated.

- Gross erosion in the watershed will be reduced 44 percent 9. after the project is complete.
- Suspended sediment in watershed runoff will be reduced 65 10. percent.
- 11. Sediment originating in the watershed and deposited in B. A. Steinhagen Lake will be reduced 65 percent.
- Existing fishery resources in the watershed will be improved. 12.
- Approximately 62 acres of additional fish and waterfowl 13. resting habitat will be created.
- 14. Continued forest fire prevention and control will prevent destruction of forestry resources and protect wildlife populations and habitat.
- The purchase of building materials, petroleum products, etc. * 15. necessary for construction will stimulate the economy.
- 16. Installation of the structural works of improvement will create about 31 man-years of employment.
- An estimated \$8,380 in increased income to households will be 1.7. realized annually by the local economy.
- 18. Intangible public health benefits will be realized, such as elimination of hazards associated with damage to water supply and waste disposal systems, improved vector control, and reduction of hazards to loss of life and injury.
- 19. Public funds required for repairing roads and utilities damaged by floods can be shifted to permanent investments that improve the quality of living.
- 20. During construction of the structural works of improvement, air and water pollution will temporarily increase from dust and sediment inherent to the construction process.
- After the project is complete, approximately 62 acres of good 21. to excellent bottomland habitat for swamp rabbit, mink, and gray squirrel will be inundated.
- Approximately 79 acres of good to excellent wildlife habitat 22. will be altered when cleared and subsequently revegetated as dams, emergency spillways, and borrow areas.
- 23. Wildlife habitat qualities on 108 acres needed for the floodway will be slightly reduced.

List of Alternatives Considered: VI. 1. Land treatment only

- Land treatment and flood plain zoning 2.
- Land treatment and floodproofing 3.
- Land treatment and flood insurance
- Land treatment and relocation
- Land treatment and a combination of flood plain zoning, 6. floodproofing, and relocation 7. Land treatment and channel work
- Foregoing the implementation of a project 8.

VII. Agencies from Which Comments Have Been Received:

U. S. Department of the Army; U. S. Department of the Interior; U. S. Department of Health, Education, and Welfare; U. S. Department of Transportation; Environmental Protection Agency; Advisory Council on Historic Preservation; Division of Planning Coordination (State agency designated by Governor and State Clearinghouse); Deep East Texas Development Council (Regional Clearinghouse); and the National Audubon Society.



USDA SOIL CONSERVATION SERVICE

FINAL ENVIRONMENTAL IMPACT STATEMENT

for

SANDY CREEK WATERSHED

Jasper County, Texas

Installation of this project constitutes an administrative action. Federal assistance will be provided under authority of Public Law 83-566, 83rd Congress, 68 Stat. 666, as amended.

SPONSORING LOCAL ORGANIZATIONS

Jasper-Newton Soil and Water Conservation District
City of Jasper
Upper Jasper County Water Authority

PROJECT OBJECTIVES AND PURPOSES

Reconnaissance studies were made by representatives of the Soil Conservation Service and sponsoring local organizations to determine watershed problems and possible solutions. There is a history of frequent flood damage to business, residential, and railroad properties; city streets; and utilities in Jasper and to agricultural properties along Sandy Creek and its tributaries. Meetings were held to reach agreement on water, recreational, fish and wildlife, human, and watershed resource development needs. Desires of sponsoring local organizations were discussed, and initial project objectives were formulated.

The following specific objectives were agreed to:

- 1. Establish land treatment measures which contribute directly to watershed protection and flood prevention. Included is the application of measures by the end of the five-year project installation period that will adequately protect soil, water, and plant resources. The goal is to increase the establishment of needed land treatment measures from the present 62 percent to 90 percent by the end of the project installation period. These resources are considered to be adequately protected when their deterioration, either natural or caused by man, is effectively curtailed.
- 2. Attain as large a reduction in average annual flood damages to agricultural properties above and below the City of Jasper as feasible with due considerations to effects upon the forest environment, wildlife, existing improvements, and topography.

3. Attain a 90 to 95 percent reduction in average annual flood damages to the urban properties in Jasper with consideration given to the 100-year frequency storm.

In addition to the afore mentioned objectives, the U.S. Forest Service, working with the Texas Forest Service, has recommended and the sponsoring local organizations agree with the following goals and plans for implementation of land treatment measures on forestland in the watershed:

- 1. Stand improvement work will be accomplished on 3,800 acres by manipulation of stand composition and improvement cutting to obtain optimal production and protection of litter, humus, and forest cover.
- 2. Tree planting will be applied on 1,500 acres of open land to reduce storm runoff and erosion by developing a protective cover on an absorbent forest floor of a spongy humus layer under a protective layer of litter.
- 3. Develop an accelerated fire prevention and fire suppression program to reduce the number of fires which occur and the acreage burned each year. In addition to allowing timber stands to improve hydrologic conditions, it will also enhance wildlife habitat, timber production and other uses.

The sponsors considered the impacts, both favorable and adverse, in developing the plan for meeting the project objectives. The objectives selected were those that would contribute to the conservation, development, and productive use of the watershed's soil, water, and related resources. The sponsors selected measures which would help to achieve those objectives and included measures to minimize adverse impacts where practicable.

PLANNED PROJECT

The project is an integrated one for environmental protection which includes soil, water, and related resource conservation measures, both vegetative and structural, needed to control erosion, maintain or improve soil fertility, reduce flooding, and stimulate the economy.

Land Treatment

Conservation of soil, water, plant, and wildlife resources is the basic element of a flood prevention and watershed protection project. Treatment and use of land within the watershed largely determines the degree to which conservation objectives are attained. The function and useful life of structural measures such as dams and floodways are directly dependent upon the adequacy of conservation measures applied to the upstream land resource.

Needed land treatment measures are applied by individuals and others who own or directly control land within the watershed. Local project sponsors have limited control of land acquired by formal easements that will be directly affected by installation of structural measures. This land constitutes a small part (2.55%) of the total watershed.

The Jasper-Newton Soil and Water Conservation District will assist private landowners and others in applying and maintaining land treatment measures which reduce soil and water losses, assure proper functioning of structural measures, reduce flooding, and improve or preserve fish and wildlife resources.

The Jasper-Newton Soil and Water Conservation District is a local subdivision of state government with elected directors. The District is dedicated to the conservation of land, water, forest, wildlife, and related resources for the benefit of all.

Personnel of the Soil Conservation Service are available to assist land users within the District plan and apply conservation measures. Soil Conservation Service assistance to the Jasper-Newton Soil and Water Conservation District is provided for by an existing memorandum of understanding between the District and the United States Department of Agriculture. Soil Conservation Service assistance is provided at the request of the District and local land users.

Conservation plans developed by land users in consultation with resource personnel assisting the District are the basis for most land treatment measures. Conservation plans contain soil, water, and other needed inventories, data on critical conservation problems, and a record of decisions which have been agreed upon to reach conservation objectives. Technical assistance is provided to land users by the District to apply and maintain conservation practices upon completion of the conservation plan. The length of time required to fully implement a plan is contingent upon many factors including available labor, capital, materials, and time.

The condition of the soil and the growth it supports have a marked influence on the quality and quantity of water contributed by a watershed. The use of various control measures and management practices in this watershed is essential to conserve water resources and to prevent economic losses to municipal, industrial, and agricultural water supplies; fisheries; and recreation. In carrying out the various functional activities on watershed lands, including grazing of livestock and game, logging, road building, fire control, sewage disposal, and recreation, it is essential that watershed conditions be preserved and/or improved.

In addition to effectively maintaining land treatment measures already established, it is planned to establish or complete the installation of

needed measures during a five-year period on additional acreage as indicated in the following schedule:

:_	`		Fiscal	Year 1/		
CONSERVATION MEASURE:	lst :	2nd	: 3rd	: 4th	: 5th :	Total
	(acres)	(acres)	(acres)	(acres)	(acres)	(acres)
Brush Management	20	20	20	20	20	100
Pasture Planting	40	40	40	40	40	200
Pasture Management	40	40	40	40	40	200
Proper Grazing Use	600	600	600	600	600	3000
Tree Planting	3 00	300	300	300	300	1500
Woodland Improvement	760	760	760	760	760	3800

This schedule is subject to change due to climatic conditions or other factors which cannot be controlled. Cost-share assistance is available for application of conservation measures through the Rural Environmental Conservation Program administered by the Agricultural Stabilization and Conservation Service of the United States Department of Agriculture.

Sixty-two percent of the agricultural lands in the watershed now have adequate conservation treatment. Installation of planned land treatment and maintenance of previously applied conservation measures will provide adequate treatment on 90 percent of the agricultural land with project completion. This level of treatment will assure resource and environmental protection and proper function of the planned project.

Industrial forestland owners maintain their own forestry staff for technical advise and management direction. Additional technical assistance will be available from the U.S. Forest Service, Texas Forest Service, and the Soil Conservation Service.

Conservation measures that will be applied on pastureland include the planting or seeding of adapted species of perennial forage plants and their management for long term production and use. Brush management will be applied on about 100 acres of pastureland. Brush management involves the selective control of noxious woody species to reduce competition and allow the establishment of desired vegetation. If herbicides are used for brush control, only those approved and authorized under current standards and regulations will be recommended.

Woodland which is utilized by domestic livestock will be properly grazed. Proper grazing use involves the utilization of forage species at an intensity which will assure their continued growth and survival.

^{1/} All information and data, except as otherwise noted by reference to source, were collected during watershed planning investigations by the Soil Conservation Service, U.S. Department of Agriculture.

Planned conservation land treatment to be installed and maintained on forestlands include tree planting in understocked stands and stand improvement measures. Stand improvement measures include the release of tree planting and natural regeneration release and improvement cut. These measures are designed to improve stand composition and hydrologic conditions.

Fire is a constant threat to the timber and water resources of the watershed. The cooperative forest fire control program will continue in the watershed and surrounding area to prevent destruction of resources by fire.

Soil surveys, which are essential to sound planning and application of land treatment measures, have been completed for the watershed. A soil survey is the classification, mapping, correlation, and interpretation of various types of soils in an area. Soils are classified considering their physical, chemical, and mineralogical characteristics. The classified soils are located and outlined on a map or aerial photograph of the area being surveyed, and correlated to determine the relationship of the various soils in the area to one another and to similar or identical soils identified in other areas. Soil survey interpretations indicate the limitations and suitability of a soil for selected uses.

Builders, developers, and landowners will be encouraged to retain desirable trees for esthetic and beautification purposes in urban areas and areas with recreational development potential. Technical assistance will be available to help protect resources having esthetic and beautification values.

Land users will continue to install and maintain measures needed in the watershed following the project installation period.

Structural Measures - Floodwater Retarding Structures

A floodwater retarding structure is an earth dam or embankment with a principal spillway and plunge basin, an emergency spillway, a floodwater retarding pool, and a sediment pool. The function of the embankment is to temporarily impound floodwater upstream in the retarding pool. The water in the retarding pool flows, during a predetermined period, through the principal spillway which is a concrete vertical inlet and a conduit through the base of the embankment. Principal spillway flow is released into a plunge basin on the downstream side of the embankment. The plunge basin dissipates the energy of the principal spillway flow. The emergency spillway is designed to convey runoff that exceeds the planned capacity of the floodwater retarding pool past the embankment and back to the stream channel. The sediment pool is capacity below the principal spillway elevation allocated for storage of sediment expected to accumulate during a 100-year period.

Figure 1 shows a section of a typical floodwater retarding structure.

A system of six floodwater retarding structures and 2.9 miles of modified floodway will be constructed in the Sandy Creek watershed. The locations of the floodwater retarding structures and floodway to be installed are shown on the project map (Appendix D). The six planned floodwater retarding structures will detain an average of 8.30 inches of runoff from 11.98 square miles of drainage area. These structures will control runoff from approximately 31 percent of the total watershed. The total storage capacity of the floodwater retarding structures is 5,643 acre-feet, of which 339 acre-feet are for sediment storage and 5,304 acre-feet are for floodwater retarding storage.

Pertinent physical parameters of each floodwater retarding structure are as follows:

	:		Structu	re Number	r		
Parameter	: 1	: 2	: 3	: 4	: 5	: 6	
Height of Dam (ft.)	41	45	37	44	33	34	
Length of Dam (ft.)	1340	1230	1510	1052	1265	1378	
Sediment Pool							
(lowest ungated							
outlet - acres)	12	· 9	13	13	11	11	
Floodwater Retarding							
Pool and Sediment							
Reserve Pool (acres)	58	64	63	70	64	61	
Area in Dam and							
Emergency Spillway							
(acres)	12	17	12	11	13	14	
Average Depth of						-	
Sediment Pool (ft.)	3.8	4.4	3.8	4.1	4.1	4.1	

All structures are designed with sufficient sediment storage capacities to provide a 100-year project life. All planned structures will store both submerged and aerated sediment. Principal spillway crests of all structures will be set at the elevation of the 100-year sediment pools. The principal spillways will not require porting below the crest elevation because the 200 acre-feet maximum impoundment limit, including borrow, will not be exceeded in any of the individual structures. Texas water rights statutes require impoundments in excess 200 acre-feet be permitted by the Texas Water Rights Commission. There will be 278 acre-feet of sediment storage capacity provided below the lowest ungated principal spillway openings of the floodwater retarding structures.

All of the structures will have provisions to release impounded water in order to perform maintenance, and if it becomes necessary, to avoid encroachment upon prior downstream water rights.

Major problems which will materially affect construction of the floodwater retarding structures are not anticipated. Some minor design considerations to be encountered include streamflow, high water table in the sediment pool area requiring some borrow above this elevation, sandy noncohesive soils in the emergency spillways, and lack of on-site rock riprap material for the plunge basins.

All principal spillways will be on a compressible foundation. The principal spillways will have monolithic rectangular reinforced concrete inlets and prestressed concrete-lined, steel cylinder pipe outlet barrels. Rock or concrete-lined plunge basins for all floodwater retarding structures are included in the preliminary details. Structural details will be treated in the final design phase.

The six embankments will be earth fill with vegetative cover. Ample and suitable earth materials for the six embankments are available within

PRINCIPAL SPILLWAY

DRAIN VALVE

SEDIMENT POOL

BORROW PIT

DETENTION POOL

EMERGENCY SPILLWAY CREST

short haul distances. These materials consist of sandy and silty clay, clayey sand, and silty sand (CL, SC, and SM as classified in accordance with the Unified Soils Classification System). It is estimated that required emergency spillway excavation will provide about 30 percent of the needed embankment material for the six floodwater retarding structures. Emergency spillway excavation for floodwater retarding structure No. 2 is expected to yield a maximum of about 73 percent of the embankment fill, and emergency spillway excavation for floodwater retarding structure No. 4 will yield a minimum of 8 percent of the embankment fill. In addition to obtaining earth fill materials from required emergency spillway excavation, it may be necessary to obtain earth materials above sediment pool elevations due to high water table levels. Water table levels range from surface elevation to approximately five feet below the surface in the sediment pools and foundation areas of the floodwater retarding structures.

Foundation materials at all six floodwater retarding structure sites are characterized by permeable sandy and silty clay, and clayey and silty sand which will require foundation drainage measures. These materials are water saturated near the stream channels and adjacent flat and level areas. Special techniques may be required for the construction or installation of cutoff trenches, drainage trenches, or other seepage control measures. With the removal of surface materials and limited zones containing organic matter and debris, foundation materials possess sufficient bearing capacity and shear strength.

All the emergency spillways will be excavated in materials having a high potential for erosion in both the control and exit channel sections. Additional floodwater detention capacity has been added to all floodwater retarding structures to reduce both the size and frequency of operation of the emergency spillways and to minimize forestland disturbance. These volumes of storage capacities are equal to the volume of runoff of the emergency spillway hydrographs and exceed minimum requirements. The percent chance of use of all emergency spillways is 0.25.

· Vegetation effective in controlling erosion will be established in the emergency spillway forebay, channel areas, and embankment slopes. A combination of multiple use plants, including woody species adapted to prevailing conditions, will be planted on all other disturbed areas to control erosion and provide habitat for wildlife. These plantings will be made in an effort to minimize habitat losses which will occur as a result of construction activities.

Streamflow conditions at each of the floodwater retarding structure sites is perennial. Flow volumes are considered to be large enough at each proposed site to maintain sediment pool impoundment levels at the principal spillway elevation.

The construction of the six floodwater retarding structures during a fiveyear project installation period is expected to progress as shown in the following schedule.

	: Fiscal Year														
	:	lst	:	2nd	:		3rd	:		4th		:		5th	
Floodwater Retarding	:														
Structure Number	:	•	0	***	:	3	and 4	:	1	and	2	:	5	and	6

This schedule may be changed from year to year to conform with appropriations, accomplishments, and any mutually desirable changes.

Installation of floodwater retarding structures will require change in location or modification of known existing improvements as follows:

Site No. 1 - none

Site No. 2 - county road

Site No. 3 - private fence

Site No. 4 - fences, water well, vacant house, and a garage

Site No. 5 - fences

Site No. 6 - private fence and a county road

There are both private and public road crossings below the planned flood-water retarding structures which will be made impassable by release flows. The public crossings will be improved to make them passable during prolonged release flows or alternate routes will be provided for use during periods of inundation.

Under present conditions there are no apparent displacements of persons, businesses or farms as a result of installing structural measures.

During construction of all structural measures contractors will be required to adhere to strict standards set forth in a construction contract to protect the environment by minimizing soil erosion and water and air pollution. These standards will be in compliance with U. S. Department of Agriculture, Soil Conservation Service Engineering Memorandum 66, "Guidelines for Minimizing Soil Erosion and Water and Air Pollution During Construction". Excavation and construction operations will be scheduled and controlled to prevent exposure of extraneous amounts of unprotected soil to erosion and the resulting translocation of sediments. Measures to control erosion will be uniquely specified for each work site and will include, as applicable, use of temporary vegetation or mulches, diversions, mechanical retardation of runoff, and traps. Harmful dust and other pollutants inherent to the construction process will be held to minimum practical limits. Haul roads and excavation areas, and other work sites will be sprinkled with water as needed to keep dust within tolerable limits. Contract specifications will require that fuel, lubricants, and chemicals be adequately labeled and stored safely in protected areas, and disposal at the work site will be by approved methods and procedures. Clearing and disposal of brush and vegetation will be carried out in accordance with applicable laws, ordinances, and regulations in respect to burning. The contract will set forth specific stipulations to prevent uncontrolled grass, brush, or forest fires. Disposal of brush and vegetation will be by burying, hauling to approved off-site locations, or controlled burning, as applicable.

Stringent requirements for safety and health in conformance with the Construction Safety Act will be included in the construction contract.

Necessary sanitary facilities, including garbage disposal facilities, will be located to prohibit such facilities from being a pollution hazard to live streams, wells, or springs in conformance with Federal, State, and

local water pollution control regulations. Special provisions in the construction contract will incorporate by reference, and thereby make the contract provisions conform to "Safety and Health Regulations for Construction, Part I and Part II", U.S. Department of the Interior, Bureau of Reclamation. Soil Conservation Service guidelines that provide for the incorporating of the Bureau of Reclamation regulations into construction contracts are in the "Soil Conservation Service Administrative Services Handbook, Chapter 6". Conformance to all environmental control requirements will be monitored constantly by a construction inspector who will be on-site during all periods of construction operation.

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Efforts will be made to avoid creating conditions which will increase populations of vectors which affect public health conditions. Prevention and control measures will be implemented, if needed, in cooperation with appropriate Federal, State, and local health agencies to suppress proliferation of vectors such as aquatic insects, terrestrial arthropods and rodents, etc.

The six floodwater retarding structures are scheduled to be constructed during three years of the five-year installation period. It is not anticipated that construction work on more than two floodwater retarding structures will be underway at the same time. This will minimize cumulative environmental effects resulting from construction activities.

All six impoundments in the sediment pools of the floodwater retarding structures have potential for providing public recreation on a very limited basis. Water surface areas will range from 9 to 13 acres. The accessibility of structures Nos. 1 and 3 will be restricted due to the lack of suitable roads to the sites. The six floodwater retarding structures will be constructed on private lands and the sponsoring local organizations presently have no plans for providing public access to them. Sponsors have given assurance that adequate sanitary facilities meeting local and state health standards will be provided if the impoundments in the sediment pools are used for recreational purposes.

All applicable state laws will be complied with in the design and construction of the structural measures as well as those pertaining to the storage, maintenance of quality, and use of water.

The watershed work plan has been coordinated with the Texas State Historical Commission and the National Park Service, USDI. An archeology survey of the floodwater retarding sites was conducted by the Department of Anthropology, Archeology Research Program, Southern Methodist University, under the direction of Mr. S. Alan Skinner as principal investigator. The survey indicated no evidence of Indian habitation in any of the reservoir areas. No evidence was found that archeological resources will be affected by construction and maintenance of the proposed structures. However, if evidence of significant archeological features are observed before or during construction, the Secretary of the Interior will be notified so he may have investigations carried out to evaluate and salvage, if warranted, the resources This will be done in compliance with Public Law 86-523.

Structural Measures - Floodway

Channel stability investigations and studies were made to help determine the feasibility of excavating and enlarging the channel on main stem Sandy Creek and Little Sandy Creek within and near the corporate limits of the city of Jasper. These studies and investigations indicate that an excavated channel in the area would present stability problems of such a magnitude as to preclude it as a feasible structural increment necessary to provide the required level of protection for the City.

Channel bank and stream channel bedload materials in the area were sampled and tested. All samples were classified in accordance with the Unified Soils Classification System. Nine of the 20 channel bank samples were classified as clay and silt (CL, CL-ML, and MH) with plasticity indexes from 8 to 22. The remaining 11 samples were fine sand (SP, SM, and SC-SM) with little or no plasticity. All stream channel bedload samples were fine sand. Very sandy clay is also present in the flood plain in the vicinity of the Jasper city sewage plant (Appendix D).

The stream channel and its banks within the city limits of Jasper are generally in a stable condition, exhibiting no indication of appreciable aggradation or degradation. The exception to this condition is where fallen trees and logs have lodged in the channel causing bank erosion and excessive channel bedload accumulations. The stream channel capacity is inadequate to contain and convey runoff. One-half or more of the flood plain in the area is inundated on the average of once every two to three years.

In lieu of an excavated channel, a modified floodway in combination with the six floodwater retarding structures, has been selected as the method for achieving satisfactory flood damage reduction in the City of Jasper. The floodway (Appendix C) is designed to be approximately 14,100 feet in length and located along Sandy Creek, beginning at Station 144+00 near the northwest corner of the City Sewer Plant, then progressing upstream to Station 285+00 at Farm Road 766. Little Sandy Creek floodway length will be approximately 1,200 feet beginning at Station 0+00 and ending at Station 12+00. The total floodway length is 15,300 feet or about 2.9 miles. The floodway will not generally be excavated or leveed, but will be developed by removing debris, dense underbrush and small trees from the existing channel, channel banks, and flood plain area up to 200 feet on each side of the channel (figure 2). The minimum area required is 108 acres, all within the City of Jasper.

Hydraulic studies indicate that by lowering the "n" values (Mannings coefficient of roughness) to about 0.040 for the floodway area, a floodway approximately 400 feet wide would be sufficient to significantly improve the hydraulic characteristics of the flood plain by reducing the elevation of the 100-year flood event associated with the planned six floodwater retarding structures.

The 100-year flood event was selected for design of the floodway in order to provide adequate protection to urban properties. The 100-year design discharge was determined from flood routings, for present and with project conditions. The floodway and the six floodwater retarding structures provide for a 100-year level of protection to existing structural properties within the urban area of Jasper.

Unusual problems are not anticipated in accomplishing the required clearing and maintenance of the floodway. However, from the city sewage plant and extending upstream about 1,400 feet, the flood plain area is too wet to facilitate clearing and proper maintenance. A surface lateral to provide adequate surface drainage for this area will be constructed during the initial phase of floodway development. This minimum size surface lateral will not have a formal channel design. The grade of this lateral will be less than 0.00075 feet per foot.

A canopy of mast producing and den-site trees most beneficial to wildlife and aesthetic values will be retained in the floodway area. Trees to be retained will be selected on the basis of good vigor and good full crown. Young healthy trees with good potential are to be preferred to mature trees of low vigor. Beauty and diversity will be an important consideration in selecting trees to be retained. The floodway will have a park-like atmosphere. (figure 2A). This will be accomplished by marking trees for retention prior to clearing operations. This retention of mature overstory species will assure that mast producing trees and den-site locations remain.

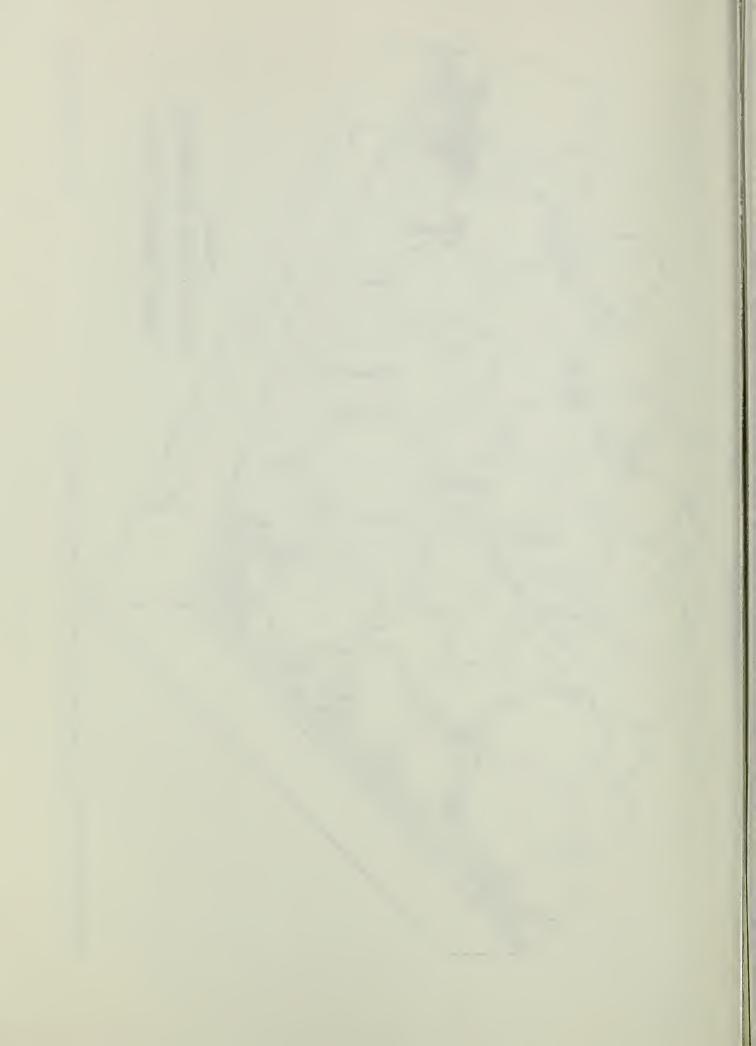
There will be adequate trunk spacing and low branches will be trimmed to allow use of maintenance equipment for control of undergrowth. Grass will be planted or other suitable ground cover will be established on substantial areas disturbed and denuded during construction clearing operations.

Public Law 566 funds for installation of structural measures will not be provided until the City of Jasper institutes a form of flood plain zoning to preclude further urban expansion in the designated floodway area. The City will enact a zoning ordinance to regulate future urban expansion in the area between the 100-year with project elevation and the designated floodway (Appendix C). This restriction will not preclude developments in this area on landfill or raised foundations to elevations exceeding the 100-year with project water level. The City will determine and furnish the minimum acceptable elevation as shown on Figure 2 before construction starts on any new development.

There are no planned appurtenances to be constructed with the floodway. There are no alterations, modifications, or changes in location of existing improvements with installation of the floodway. The floodway is expected to be installed during the second year of the project installation period.

The areas on which the six floodwater retarding structures will be installed presently serve as wildlife habitat for many species. The following actions, as formulated in the project, will be taken to reduce or minimize wildlife habitat losses:

- 1. The embankments will be seeded to a grass-legume mixture which could include lespedeza (Lespedeza spp.), pensicola bahiagrass (Paspalum notatum var. saurae), or other species and varieties that will provide wildlife food and cover in addition to necessary erosion control.
- 2. Borrow pits; excavated, filled, or denuded areas in the emergency spillways; and all other disturbed areas above the sediment pool elevations will be planted to some desirable vegetation, such as japanese honeysuckle (Lonicera japonica), that can be established without excessive cost, produce essential erosion control, and



be of benefit to wildlife. It is expected that some fertilization and maintenance will be required for proper establishment. Due to the small areas involved, fertilization of these areas should not contribute to lower water quality.

- 3. Water tolerant trees capable of surviving in water depths anticipated in the upper portions of the sediment pools will be left in place. Trees which impede the proper functioning of structures or which will require undue maintenance will be removed.
- 4. The six embankments and excavated or denuded areas in the emergency spillways will be fenced to protect vegetation established for wildlife food and cover and erosion control. The location of fences will be determined during final design and construction to insure that the most advantageous alignment and placement is obtained.
- of the embankments will be planted to a hardwood tree mixture which could consist of oak (Quercus spp.), dogwood (Cornus spp.), blackgum (Nyssa sylvatica), chinquapin (Castanea spp.) and yaupon (Ilex vomitoria). The selected species to be planted will be determined by prevailing site conditions. In no case, will trees be planted in such close proximity to the base of the embankments that future root development and encroachment would endanger or create undue maintenance problems to the structure or its appurtenances. As prevailing conditions allow, the plantings should approach a 12 foot by 12 foot spacing. They will be maintained at a 75 percent survival rate for the initial five years after construction.
- 6. Squirrel nest boxes will be placed in the retarding pools. These boxes will be constructed of cypress, redwood, or other durable material. Boxes constructed of discarded automobile tires would be unsightly in the area and will not be used. A maximum of three boxes per acre of destroyed habitat will be installed. Food, particularly mast, is considered to be the most important limiting factor for squirrels. The degree to which these boxes will be utilized and their value in sustaining a squirrel population is not fully known. Biologists of the Soil Conservation Service will make a full evaluation of the utilization of the boxes after each system of boxes is installed. The service will invite other interested agencies to jointly participate in the evaluation study. Results of this study will be made available to other organizations and individuals who may be interested in squirrel management.

In addition to the measures that will be accomplished as part of planned project measures, there are other measures that can be implemented by land users which will help maintain or enhance the fish and wildlife resources. Sponsoring local organizations and the Jasper-Newton Soil and Water

Conservation District, in cooperation with appropriate agencies, will provide technical assistance to land users in the application of the following measures:

- Initial stocking of the impoundments formed by the floodwater retarding structures and management thereafter to maintain adequate populations of game fish. The Texas Parks and Wildlife Department will assist with this measure.
- 2. Management of all undisturbed land in the floodwater retarding pool areas after construction for mast producing hardwood trees.
- 3. Installation of wood duck nest boxes in or adjacent to the sediment pools where water tolerant trees are not removed at the rate of about 10 nest boxes per floodwater retarding structure.
- 4. Use of prescribed burning practices whereby burning is done during the late winter months and firebreaks are renovated in alternate years during the same period.
- 5. Use of "checker board" arrangements of 20 to 30 acre blocks for forestland management and treatment where economically feasible and prevailing conditions allow.

The recommended practices and measures included in the project were agreed upon by the U. S. Fish and Wildlife Service, in cooperation with the Texas Parks and Wildlife Department and the Soil Conservation Service, as a result of field investigations and studies by biologists from those agencies and the Soil Conservation Service.

Land Use Changes

The minimum land rights required will be those necessary to construct, operate, maintain, and inspect the works of improvement; to provide for flowage of water in, upon, or through the structures; and provide for the permanent storage and/or temporary detention of any sediment or water.

Under present conditions, there will be no apparent displacements or relocations of persons, businesses, or farm operations as a result of installation of structural measures. If relocations or displacements become necessary, they will be carried out in accordance with Public Law 91-646, Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

Installation of the six floodwater retarding structures will require 528 acres of land which includes 516 acres of forestland, 2 acres of open pastureland, and 10 acres of existing surface water impounding areas. The construction of dams and emergency spillways will require about 79 acres of which all are forestland. The sediment pools at the crest of the principal spillways will inundate 69 acres of which 60 acres are forestland, 2 acres are open pastureland, and 7 acres are existing impounded water. These pools will inundate about 2.2 miles of perennial stream channels. The retarding pools will require 380 acres of which 377 acres are forestland and 3 acres are existing impounded water areas for temporary

impoundment of floodwater. All needed borrow for the embankments can be obtained from the emergency spillway areas and from within the detention and sediment pool areas.

The areas needed for construction of the dams, emergency spillways, and the sediment pool areas up to the lowest ungated outlet will be cleared of existing vegetation except water tolerant trees in the upper portions of the sediment pools.

Approximately 79 acres of existing forest vegetation will be cleared for the construction of dams and emergency spillways. An additional 60 acres of forest vegetation will be cleared in sediment pool areas up to the lowest ungated outlet. Water tolerant trees in the upper portions of sediment pools which do not impede the normal functioning of the structures or cause undue maintenance will be left in place.

Vegetation which will be removed consists of the following species and approximate acreages:

Thirty-three acres are typically a bottomland hardwood community adjacent to streams characterized by wet, seepy areas locally known as "spring heads" or "green heads". Vegetation consists of sweetbay (Magnolia virginiana), water oak (Quercus nigra), blackgum, large gallberry (Ilex coriacea), hazel alder (Alnus serrulata), greenbrier (Smilax spp.), red bay (Persea borbonia), and american hornbeam (Carpinus caroliniana). Various shrubs, vines, sedges (Carex spp.), and grasses occur in the understory of this community. About 2,100 acres of this community exist in the watershed.

Forty-four acres are a pine-hardwood community which is characteristically a transition zone between the bottomlands and uplands. Vegetation of this community typically consists of beech (Fagus grandifolia), sweetbay, magnolia (Magnolia grandiflora), hickory (Carya spp.), water oak, red oak (Quercus falcata), blackgum, american hornbeam, arrowwood (Viburnum dentatum), red maple (Acer rubrum), ash, (Fraxinus spp.), mulberry (Morus rubra), and loblolly pine (Pinus taeda). Understory species include dogwood, hawthorns, (Crataegus spp.), elm (Ulmus spp.), american beautyberry (Callicarpa americana), yaupon, vines, sedges, and grasses. About 3,200 acres of this community exist in the watershed.

Sixty-two acres are an upland forest community which has been largely altered by burning, grazing, and commercial timber production practices. Soils are droughty and infertile sands. Much of this community has been clear cut and planted to loblolly

pine. Vegetation which presently occupies this area consists of red oak, sandjack oak (Quercus incana), hickory, blackjack oak (Quercus marilandica), post oak (Quercus stellata), loblolly pine, and longleaf pine (Pinus palustris). Pinehill bluestem (Andropogon divergens), and panicums (Panicum spp.) are the primary grasses. About 16,000 acres of this community exist within the watershed.

Within the floodway area approximately 108 acres of vegetation will be altered by the removal of understory vegetation. The overstory, which consists of oak, sweetgum, sweetbay, blackgum, red maple, beech, and baldcypress (Taxodium distichum), will be retained. Understory species include large gallberry, dogwood, hawthorns, buckeye (Aesculus glabra var. arguta), american beautyberry, yaupon, holly (Ilex opaca), grape (Vitus spp.), smilax, and sumac (Rhus spp.).

Operation and Maintenance

Planned land treatment measures will be maintained by landowners and operators of farms and forestlands on which measures are applied under agreement with the Jasper-Newton Soil and Water Conservation District. Representatives of the District will periodically survey the status of land treatment and provide technical assistance to land users in the performance of needed maintenance.

The environment will continue to be protected from soil erosion and water pollution following completion of construction. Project sponsors will operate and maintain the structural measures in accordance with an operation and maintenance agreement for each floodwater retarding structure and the floodway. The operations and maintenance agreement, in accordance with provisions of the Soil Conservation Service Operations and Maintenance Handbook of Texas, will be executed prior to signing a project agreement for the construction of any of the proposed structural measures, and will include precise provisions for retention and disposal of property acquired or improved with Public Law 566 financial assistance. The agreement will set forth the inspections to be made and the maintenance to be performed to prevent soil erosion and water pollution. A specific operation and maintenance plan will be prepared for each structural measure to facilitate implementation of the various aspects of the agreement.

The City of Jasper will be responsible for operation and maintenance of the structural measures. Funds will come from a \$15,000 reserve fund maintained by the City for this purpose. This will be financed by a budgeted line item in the City's annual budget.

The floodwater retarding structures, measures to reduce or minimize wildlife habitat losses, and floodway will be inspected at least annually and after each heavy rain by representatives of the City of Jasper and the Jasper-Newton Soil and Water Conservation District. A Soil Conservation Service representative will participate in these inspections for a period of at least three years following construction. The Soil Conservation Service

will participate in inspections as often as it elects to do so after the third year. Items of inspection will include, but are not limited to, conditions of the principal spillway and its appurtenances, the emergency spillway and the earth embankments for the floodwater retarding structures; general conditions and usefulness of measures to reduce or minimize wildlife habitat losses; and degradation and aggregation of the channel and flood plain area and condition of undergrowth on the floodway. A written report will be made of each inspection. A copy of each report will be provided by the City of Jasper to the Jasper-Newton Soil and Water Conservation District and to the designated Service representative within ten days of the date on which the inspection was made.

Upon completion of each floodwater retarding structure by the contractor, subject to the establishment of vegetation, the City of Jasper will assume responsibility for maintenance of the structure. They will perform promptly, or have performed promptly, all maintenance of the structure as determined to be needed by either the sponsors or the Service, including that required to prevent soil erosion and water pollution.

The effectiveness of the floodway in providing the planned level of protection to urban properties is dependent upon a high and consistent level of maintenance. The surface lateral will require frequent inspection and maintenance throughout the project life to insure that it will remain open at all times so that maintenance of the floodway can be performed when needed.

Maintenance of the floodway will be most critical in the first five years of operation. Control of vegetation will require frequent maintenance during the first few years to prevent the rapid return and increased density of undergrowth. Maintenance will be performed by mechnical and hand operation to control vegetation to a low retardance type of growth and to maintain a park-like atmosphere within the floodway.

The estimated average annual cost of operation and maintenance of the floodway is \$3,000. For the first few years of operation, maintenance will be greater than \$3,000, but with early and intense control of regrowth this amount should decrease. The estimated average annual cost of operation and maintenance for the six floodwater retarding structures is \$2,240, including \$230 for the operation, maintenance and replacement of measures to reduce or minimize wildlife habitat losses.

All mitigating measures, as outlined in the work plan, are considered as integral parts or as appurtenances to the structural measures and will be maintained accordingly.

Sponsors will also control the handling, use, and application of any herbicides and pesticides that may be needed for operation and maintenance of structural measures. If the use of chemicals should be

required, only approved and authorized reagents and compounds will be used. Their application will be compatible with current laws regulating their use. In addition to prudent judgment, ordinances and standards concerned with the disposal or storage of unused chemicals, empty containers, contaminated paraphernalia, etc., will be observed and applied.

The Soil Conservation Service will participate in operation and maintenance only to the extent of furnishing technical assistance to aid in inspections and technical guidance and information necessary for the operation and maintenance program.

Provisions will be made for unrestricted access by representatives of the sponsoring local organizations and the Soil Conservation Service to inspect all structural measures and their appurtenances at any time and for sponsoring local organizations to perform operation and maintenance. Easements insuring this unrestricted ingress and egress will be furnished by the sponsoring local organizations.

The City of Jasper will maintain a record of all maintenance inspections made, maintenance performed, and cost of such maintenance and have it available for inspection by Soil Conservation Service personnel.

The necessary maintenance work will be accomplished by contracts.

force accounts, or by sponsoring local organizations using their own equipment

Project Costs

The estimated costs for installation of the project are presented in the following tabulation:

	Estimated Cost (Dollars) 1/						
	: P.	L. 566 Fu	ınds	•	Other Fund	is	:
	: Non-Feder			:Non-Fed	eral Land	:	:
Installation Cost Item	:S.C.S. <u>3</u> /:	F.S. 3/:	Total	:S.C.S.3	/:F.S. <u>3/</u>	: Total	: TOTAL
							1
Land Treatment 2/							1
Installation	-	•		23,000	119,800	142,800	142,8
Technical Assistance	_	9,900	9,900	8,810	3,100	11,910	21,8
Subtotal	_	9,900	9,900	31,810	122,900	154,710	164,6
Structural Measures							
Construction	644,830	_	644,830	-	_	-	644,8
Engineering Services	43,620	-	43,620	_	-	_	43,6
Project Administration	114,380	-	114,380	4,000	_	4,000	118,3
Land Rights	_	_	_	94,350		94,350	94,3
Subtota1	802,830	_	802,830	98,350	_	98,350	901,1
TOTAL PROJECT	802,830	9,900	812,730	130,160	122,900	253,060	1,065,7

^{1/} Price Base: 1974

3/ Federal agency responsible for assisting in installation of works of improvement.

Includes only areas estimated to be adequately treated during the project installation period. Treatment will be accelerated throughout the watershed, and dollar amounts apply to total land areas, not just to adequately treated areas.

Annual benefit to cost ratio is 1.9:1.0.

The estimated average annual cost of operation and maintenance of the six floodwater retarding structures and floodway is \$5,240, of which \$2,240 is for the floodwater retarding structures and \$3,000 is for the floodway.

ENVIRONMENTAL SETTING

Physical Resources

Sandy Creek watershed is within the Texas Gulf River Basin Region and comprises an area of 25,000 acres, or about 39.06 square miles. The watershed is located in the northern portion of Jasper County, Texas, approximately 120 miles northeast of Houston, Texas; 70 miles north of the Beaumont-Orange-Port Arthur area; and 30 miles west of the Texas-Louisiana State line.

Sandy Creek is a perennial stream that rises approximately 10 miles north of the City of Jasper. It flows in an unmodified, well defined channel in a southerly direction to the eastern edge of the city. Its course then turns to a southwesterly direction within the city and continues for about 2.4 miles in a modified, well defined channel. It then enters a 0.25 mile segment with no defined channel. The lack of a defined channel is the result of sediment accumulation in the area. Sandy Creek continues southwesterly for 10 miles, discharging into B. A. Steinhagen Lake on the Neches River. The two principal tributaries in the watershed are Trotti Creek and Little Sandy Creek which flow into Sandy Creek within the city limits of Jasper. The lower limit of the watershed, as considered for work plan development, is immediately upstream from Texas State Highway 63.

In 1934, a portion of Sandy Creek, starting near Farm Road 776 and terminating near the city sewage treatment plant, was straightened and enlarged by a Civil Works Administration Project. Remnants of this project are nonexistent due to a sediment accumulation, growth of vegetation, and lack of maintenance.

There are no existing or proposed water resource development projects of other agencies within the watershed.

Geologic strata cropping out in the watershed are shown in the following tabulation: 1/

SYSTEM	:	SERIES	:	FORMATION
Quaternary		Recent		Alluvium
		Pleistocene		Willis
Tertiary		Miocene		Fleming
				Catahoula

^{1/} Refer to "Geologic Atlas of Texas" Beaumont and Palestine Sheets; University of Texas, Bureau of Economic Geology

There is no folding or faulting of geologic strata in the watershed or surrounding area. All rock in the area dip gently to the south and the strike is east-west.

The Catahoula Formation is the oldest geologic rock unit in the water-shed. Its outcrop is a relatively small area in the northern portion of the watershed. Elsewhere in the watershed the Catahoula Formation is overlain conformably by the Fleming Formation and unconformably by the Willis Formation. The Catahoula Formation is comprised of sandy, tuffaceous, light gray mudstone in its upper horizons that weathers to dark gray color. The lower 10 to 80 feet is mostly polished, coarse grained, quartz sand commonly cemented with opal. The total thickness of the Catahoula Formation is 250 to 300 feet.

The Fleming Formation within the watershed has a dendritic shaped outcrop that has been exposed by erosion in the drainage system of stream channels. The formation is composed mostly of calcareous clay, however, indurated silt and sand are locally predominant. Unweathered bedrock is commonly light gray to yellowish gray which weathers to light gray or red near its contact with the Willis Formation. The thickness of the Fleming Formation is from 1,300 feet to 1,450 feet.

The Willis Formation is the predominant geologic outcrop within the watershed in areal extent and occupies the topographically high areas. This formation was deposited unconformably on underlying strata in the watershed. Except in extremely dry extended periods of time, springs issue from a perched water table at the contact between the Willis Formation and Fleming or Catahoula formations. The flow of major streams is perennial as a result of discharge from these springs. The Willis Formation is comprised of clay, silt, sand, and silicious gravel of granule to pebble size with some petrified wood. The formation is generally deeply weathered and lateritic; indurated by clay and locally cemented with iron oxide.

Recent Alluvium in the watershed is dominantly fine grained sand with lesser amounts of silt and clay. Organic matter is locally abundant. The top of the water table in these deposits ranges in depth from ground level to approximately five feet below the surface.

The topography is nearly level in the flood plain and gently sloping to rolling on the uplands. Elevations range from approximately 520 feet above mean sea level along the northern boundary of the watershed to about 180 feet at the mouth of the watershed.

The climate is warm and subhumid. Mean monthly temperatures range from 93 degrees Fahrenheit in July to 40 degrees in January. The normal growing season is 229 days, extending from March 23 to November 6. The average annual rainfall of 52.4 inches is generally well distributed throughout the year, however the greatest amounts of precipitation usually fall during the months of May, December, and January.

The soils of the watershed are in the Southern Coastal Plain Land Resource Area. The upland soils are dominently deep fine sandy loams and loamy fine sands. Some of the soil series that occur on the uplands and Bowie, Ruston, Wagram, Lucy, Fuguay, Sacul, Tenaha, and Kirvin. The permeability of these soils ranges from moderate to slow, and they are well drained to somewhat poorly drained. The runoff is very slow to rapid. Plummer soils occur in nearly level to gently sloping positions adjacent to the bottomland and are poorly drained. The bottomland soils are loamy sand to clay loam and commonly have a high water table. Osier, Iuka, and Mantachie series occur in the bottomland areas and are moderately well to poorly drained.

Land use within the watershed is shown in the following tabulation:

Land Use	Acres	Percent
Pastureland	700	2.8
Forestland	21,300	85.2
Miscellaneous	* 3,000	12.0
	25,000	100.0

^{*} Includes roads, highways, railroad rights-of-way, urban area, farmsteads, etc.

The present land use within the flood plain area is as follows: forestland, 59 percent; pastureland, 3 percent; and miscellaneous uses including urban areas, public roads, and railroads, 38 percent.

Water for rural, domestic and livestock use is obtained from spring-fed streams, ponds, and shallow wells. The perennial spring-fed streams do not have sufficient yield to be dependable water sources for municipal and industrial needs. Water from these sources is of good quality. The City of Jasper obtains its municipal and industrial water supply from wells located in the Jasper aquifer. Jasper's present population of 6,251 and the projected population of 11,300 by 1992 can be adequately served with the existing system of wells. 1/Water for additional population and development of heavy water-using industries can be met by developing additional wells.

Surface water samples were taken 2^{\prime} at locations representative of both streamflow and impounded waters within the watershed. Locations of where samples were taken are shown on Figure 3. Samples D and E were from existing farm ponds. Other samples were taken from streamflow

^{1/ &}quot;Land Use, Population Distribution, Circulation Community Facilities" Preliminary Report 2, Jasper, Texas, Bernard Johnson Engineers, Inc. Houston, Texas

^{2/} Samples collected and analyzed by Waste Water Analysis Division, Neches River Conservation District.

in Sandy Creek. The results of the analysis are shown in the following tabulation:

Sal

The wo floor cet cl.

Pin

Sample	Temper-	рН	*TSS	D.O.*	*BOD ₅	*TDS	Total	Fecal
	ature *°F		*mg/1	*mg/1	*mg/1	*mg/1	Residue *mg/1	Coliforms *No./100 ml
A	53.5	7.6	30.0	9.3	3.4	63.0	93.0	600
В	54.0	7.7	23.0	9.0	1.4	47.0	70.0	190
С	53.5	7.0	16.5	9.3	1.4	53.5	70.0	140
D	52.5	7.2	11.5	8.3	2.8	40.5	52.0	370
E	51.0	6.7	11.0	9.4	2.0	35.5	46.5	_ 210
F	51.0	7.4	11.5	9.9	1.6	50.0	61.5	60
		*D.O.		- Dissol	ved Oxyg	gen		
		*BOD ₅		- Biolog	gical Oxy	gen Dem	and, 5 da	у
		*TDS		- Total	Dissolve	ed.		
		*No./	100 ml.	- Number	per 100	millil	iters	

Location of above mentioned water samples collected on February 6, 1975, are as follows:

*mg/1

*°F

Sample	Location
A	Sandy Creek at F.M. 777
В	Sandy Creek at Peachtree Street
С	Sandy Creek at F.M. 776
D	Farm pond immediately below location of proposed
	floodwater retarding structure No. 5
E	Farm pond at location of proposed floodwater
	retarding structure No. 5
F	Sandy Creek at county road immediately below
	location at proposed floodwater retarding
	structure No. 2

- Milligrams per liter

- Degrees Fahrenheit

Mineral resources within the watershed consists of sand and gravel deposits located along Sandy Creek flood plain. These resources are of minor economic significance to the economy of the watershed.

Plant and Animal Resources

The watershed is characterized by pine forest in association with hard-wood and pine-hardwood stands adjacent to major tributaries and in the flood plain of Sandy Creek. Forested lands comprise 21,300 acres, or 85 percent of the watershed. Pine stands make up 75 percent of the forest cover, hardwood stands 15 percent, and pine-hardwood stands 10 percent. There is a well balanced distribution of timber stands by size classes.

Pine stands are composed of loblolly pine, shortleaf pine (Pinus echinata), and longleaf pine. Major hardwoods are oaks, red maple, blackgum, beech, sweetgum, hickory, magnolia, sweetbay, mulberry, and ash. Subdominant trees and understory shrubs include dogwood, sumac, texas Buckeye, american beautyberry, hawthorns, basswood (Tilia spp.), elm, yaupon, large gallberry, and holly. Grasses and grass-like plants which predominate are pinehill bluestem, broomsedge bluestem (Andropogon virginicus), panicums, sedges, and rushes (Juncus spp.).

Grazing, fire, and logging operations have adversely affected the vegetation in many areas with resultant reductions in ground cover, species diversity and erosion protection. Present hydrologic conditions on forestland are 5 percent very good, 30 percent good, 30 percent fair, 10 percent poor, and 25 percent very poor. Hydrologic cover on most native pasture is fair and cover on improved pastures is generally good.

Improved forest management and protection will allow an increase in litter accumulation and ground cover resulting in less erosion and improved future hydrologic conditions.

The fish and wildlife habitat, species, and populations in the watershed are described by the U.S. Fish and Wildlife Service as follows:

"The fishery resources in the project area consist of 5 farm ponds totaling 35 surface acres and approximately 32 miles of streams, of which 17 miles are permanent water. The quality of fish habitat in the farm ponds is good, while that in the streams varies from poor to fair. Deposition of sand in the waterways has eliminated much of the aquatic vegetation and has significantly reduced the quality of fish habitat. Industrial wastes and domestic sewage have further deteriorated the quality of stream habitat in the vicinity of Jasper and downstream. Common fishes in project area waters include largemouth bass, channel catfish, and various species of sunfishes and minnows.

Landowners and residents of Jasper do most of the fishing in the watershed. The amount of sport fishing is light and there is no commercial fishing. Little change in these conditions is expected in the future."

"The project area is within the East Texas Timber Country Game Region. The majority of the uplands provide poor to fair quality wildlife habitat, whereas the bottomlands provide fair to excellent wildlife habitat. Wildlife species in the watershed include white-tailed deer, bobwhite, mourning dove, fox squirrel, gray squirrel, cottontail, swamp rabbit, raccoon, opossum, skunk, mink, bobcat, red fox, gray fox, coyote, and waterfowl.

Wildlife populations in general are low to moderate in upland areas and moderate to high in the bottomlands. The gray squirrel is the most abundant game animal in the project area. Fox squirrels, cottontails, swamp rabbits, raccoons, opossums, and skunks are common whereas white-tailed deer, bobwhites, mourning doves, minks, bobcats, gray foxes, red foxes, and coyotes are relatively scarce in number. A few waterfowl frequent the waterways and ponds within the project area.

Hunting is heavy for white-tailed deer and gray squirrels and is light to moderate for all other game animals. Hunting is light for waterfowl. Some of the commercial timberland is open to public hunting. The majority of hunting in the project area is done by landowners and residents of Jasper. There is some trapping for mink and raccoons.

In the future, wildlife populations in the project area would suffer some losses with the expected intensified timber management practices on commercial forestlands. These practices which lead to the development of even-age, pure softwood stands, would deplete habitat throughout the uplands and lower the carrying capacity for many of the wildlife species that presently inhabit the upland types. Increased exploitation of bottomlands in the vicinity of Jasper would destroy some excellent bottomland habitat which presently provides an essential environment for fur animals.

Hunting demands are expected to increase over the life of the project reflecting the human population growth within the area of influence. Hunting, however, would not necessarily increase as the decline in wildlife numbers within the watershed could discourage many of the hunters and spur them to look elsewhere for more favorable hunting areas."

Endangered species which occur in the general area of the watershed or which migrate through the area include the red-cockaded woodpecker, bald eagle, and American alligator. The ivory-billed woodpecker was at one time found in the area but is now probably extinct. None of the above species are known to inhabit the watershed. The watershed is not within the range of the red wolf.

Economic Resources

Forestry and related wood using industries comprise the primary economic base within the watershed. The principal wood product is pulpwood, although appreciable volumes of lumber, plywood, and cooperage are produced. Beef cattle, poultry, and poultry products are also important to the local economy. Farm income is supplemented by employment in Jasper, Beaumont, Orange, and Port Arthur.

Five major wood-using industries own and operate over 80 percent of the forestland in the watershed. The remainder of the forestland and pasture-land consists of approximately 30 farm units averaging about 100 acres in size. Numerous homesites of one to ten acres occur throughout the watershed.

The estimated current market price of land within the watershed ranges from \$300 to \$350 per acre. The range in land price depends primarily on location, accessibility, and productive capacity. The large-scale recreational developments on the Sam Rayburn Reservoir, located approximately 10 miles north of Jasper, have created a heavy demand for homesites in the forest environment. It is anticipated that the demand for small tracts will continue to increase as more people seek weekend retreats. Less than 10 percent of the agricultural land is leased or rented.

Approximately 85 percent of the farms in the watershed gross less than \$2,500 annually from agricultural sales. Approximately 60 percent of the farm operators worked off-the-farm for 100 days or more in 1972.

It is estimated that less than five percent of the agricultural land in the benefited area is devoted to farms using 1-1/2 man-years or more of hired labor.

The "Work Force Estimates for Texas Counties April 1974", shows a labor force of 8,990 for Jasper County, Approximately 4.4 percent, or 395 workers, are unemployed. This is below the state and national rates of unemployment. Approximately 30.7 percent, 2,645 workers, are employed in the agricultural sector. The nonagricultural sector employs 5,950 workers: 2,350 workers in the manufacturing sector and 3,600 workers in the nonmanufacturing sector.

The City of Jasper, located near the southern end of the watershed, has a population of 6,251 (1970 census). It is the county seat of Jasper County and the commercial center for the surrounding area, providing marketing and supply services which are important in the local economy. Local industries, which employ many residents of the area, include a plywood mill, several sawmills, poultry processing plants, and feed mills. Tourism is also important to the local economy.

The watershed is served adequately by U. S. Highways 96 and 190; State Highway 63; and Farm Roads 776, 777, 2799, and 2800. There are several county roads which provide access to the watershed. The Gulf, Colorado, and Santa Fe Railroad has loading facilities in Jasper.

Jasper County is within the boundaries of the Southeast Texas Resource Conservation and Development Project. This project is a locally initiated, sponsored, and directed project designed to carry out a program of land conservation and land utilization, accelerated economic development, reduction of chronic unemployment or under employment in an area where an impetus is needed to foster a local economy. A basic objective of an RC&D project is the orderly development, improvement, conservation, and utilization of natural resources for benefit of people within the project area. The Southeast Texas Resource Conservation and Development Program is administered by the Soil Conservation Service and covers more than five million acres in Jasper and adjoining counties.

Sponsors of the Southeast Texas Resource Conservation and Development Project have recognized the need for watershed protection and flood prevention on Sandy Creek and concur with local sponsors in the need for implementation of a watershed protection and flood prevention plan.

Recreational Resources

Excellent water-based recreation and camping facilities are located at several nearby lakes. These are B. A. Steinhagen Lake, 13,700 surface acres, 14 miles west of Jasper; Sam Rayburn Reservoir, 144,000 surface acres, 10 miles north of Jasper; and Toledo Bend Reservoir, 181,000 surface acres, 25 miles east of Jasper. The water quality is good in these three reservoirs and is expected to remain so.

The Angelina and Sabine National Forests, which a combined area of 330,000 acres, are 15 miles north of Jasper. These public recreational areas are utilized heavily by both the local citizens and people from surrounding areas.

Archaeological and Historical Resources

There are no archaeological or historic sites listed in or nominated to the National Register of Historic Places that will be adversely affected by the installation of measures included in the project. An archaeology survey of the six floodwater retarding structure sites was conducted by the Department of Anthropology, Archaeology Research Program, Southern Methodist University, under the direction of Mr. S. Alan Skinner as principal investigator. It was the opinion of the investigators that no archaeological resources will be affected by the proposed floodwater retarding structures. The report of Mr. S. Alan Skinner is available for review by qualified persons at the State Office, Soil Conservation Service, First National Bank Building, Temple, Texas 76501.

Soil, Water, and Plant Management Status

The watershed is dominated by forestland, which comprises over 85 percent of the total land area. Extensive changes in land use are not anticipated. However, the development of tracts less than ten acres in size for home sites is expected to increase in the future.

There are 35 farm and forest industry units located wholly or partially within the watershed. Ten resource conservation plans, covering 17,076 acres, or 68 percent of the watershed, have been developed in cooperation with the Jasper-Newton Soil and Water Conservation District. Assistance on forest management practices is also provided to land users by the Texas Forest Service and the U. S. Forest Service.

Forestland owners can be provided with a range of management alternatives for their lands. The Texas Forest Service, in cooperation with the U. S. Forest Service, is available to help landowners develop forest management plans for these and other woodlands under existing and active cooperative forest management programs. Forest management practices include: tree planting and stand improvement measures for the enhancement of the water-related capabilities of the forest, and other forest uses including wood products, wildlife habitat, recreational resources, esthetics, and climatic influences.

Watershed timber volumes per acre average about 2,600 board feet of saw timber and 300 cubic feet of pulpwood. These volumes are significantly below the potential production which could be realized with improved forestland management.

Land treatment measures which have been applied to date at an estimated expenditure of \$582,320 by land users amount to about 67 percent of the project total treatment needed. Soil surveys have been completed for the entire watershed.

WATER AND RELATED LAND RESOURCE PROBLEMS

Land Management

Land treatment on forestlands owned or controlled by lumber companies is directed to maximum sustained timber production. Clear cutting in blocks and pine reforestation has been the most common type of management on tracts controlled by these companies. Burning is sometimes practiced following cutting. Erosion is higher following cutting for a period of about two years. Reestablishment of timber stands provides soil cover and reduces erosion to a minimum until the trees reach a marketable age and the cycle is repeated. Twelve to fifteen years is required for pine seedlings to reach a marketable size. Future forest management programs designed to meet watershed needs will receive priority. Tree planting and stand improvement are land treatment measures planned for implementation. Some bottomland areas have a high water table which limits their potential for some timber species such as pine.

Land treatment measures applied on small farms within the watershed have been limited due to inadequate financial resources of land users and high initial cost of treatment measures per acre.

Soils within the watershed require moderate to high inputs of fertilizer for sustained production of crops. Low fertility limits production on many improved pastures and requires high inputs of fertilizer. Current availability and cost of fertilizer limits its application on pastureland.

The only increase of fertilizer within the watershed, as a result of project installation, will be that associated with the establishment and maintenance of the vegetation on dams, spillways, and disturbed areas. A maximum of 97 acres will be fertilized either for installation or maintenance. Only about half of the maximum acreage will be fertilized in any one year. The rate of fertilizer applied will be relatively low, only that necessary for the establishment or maintenance of cover. This very small increase of fertilizer use should not have any significant effect on the quality of any water resource within the watershed.

Floodwater Damage

An estimated 1,095 acres of the watershed, excluding stream channels, is flood plain. This is the area that would be inundated by a 100-year frequency flood.

Flooding occurs frequently in portions of the watershed causing minor damages to agricultural properties and major damages to urban properties. Major floods, inundating more than half the flood plain, occur on the average of once every two to three years. Minor floods, inundating less than half the flood plain, occur on the average of two or three times a year. Cumulative totals of recurring flooding show an average of 859 acres flooded annually during the evaluation period.

There are 15 owners and operators who have experienced floodwater damage on agricultural land in the flood plain. In the urban portion of the flood plain, floodwater damages have occurred on properties involving 40 residential units and 30 commercial units.

The small frequent floods have a nuisance effect on the property owners and residents within the watershed. Floodwaters from small floods overflow the natural streambanks and inundate portions of the flood plain creating swamping conditions ideal for vector breeding habitat. These floods have a disruptive effect to both landowners and commercial timber enterprises.

The flood plain of Sandy Creek within Jasper is subject to frequent flooding. Properties in the flood plain reflect a high percentage of commercial development. Most of the residential property in the flood plain of Sandy Creek is composed of moderate to low value units. These residential units are subject to more frequent damage than most of the business properties within the flood plain. For the past 10 to 20 years, developments within the flood hazard areas have been considerable less than in other areas of Jasper. Because of the flood threat, owners are reluctant to upgrade their homes and businesses because of fear of greater flood losses.

The most damaging flood in recent years occurred February 9-10, 1966. The total rainfall recorded at Jasper was 10.00 inches. 1 The recurrence interval of the resulting flood peak was estimated to be about 17 years. The resulting flood inundated approximately 755 acres of flood plain in the watershed, of which 265 acres were located inside the urban area of

^{1/} Climatological Data, U.S. Department of Commerce, Environmental Science Services Administration, Environmental Data Service, Volume 71 No. 2

Jasper. Under the present level of development, direct monetary floodwater damage from such a flood is estimated to be \$59,940, of which \$59,610 would be to urban properties.

Other recent large floods that caused considerable floodwater damages occurred in 1969, 1967, and 1964.

Estimated direct floodwater damages to existing urban properties that would result from a 100-year frequency flood event are estimated at \$326,180.

For the floods evaluated, which includes floods up to and including the 100-year frequency, total direct floodwater damage is estimated to average \$89,630 annually. Of this amount, \$80 is pasture damage, \$70 is road and bridge damage, and \$89,480 is urban development. Of the damage to urban properties, \$67,800 is to commercial property, \$9,920 to residential property, and \$11,760 to city streets and utilities.

Erosion Damage

The average annual gross erosion rate is 4.8 tons per acre. Sheet erosion accounts for about 99 percent of this rate. The remaining one percent is contributed by streambank erosion, gully erosion, flood plain scour, and erosion from urban areas.

The sandy and silty soils in the watershed present considerable potential for severe upland erosion if fire, disease, or gross mismanagement of forestlands cause a reduction in canopy and ground cover for a significant period of time. About 40 percent of the forestland is grazed by cattle and hogs. Hogs are causing some erosion by their feeding habits on 2200 acres. The hogs, although few in number, roam over the area. Wildfires burn an average of 0.50 percent of the forestland annually. These damages account for the major portion of the soil loss from the forested lands on the watershed. Land treatment measures with necessary maintenance and management are essential in controlling erosion on the watershed.

Sediment Damage

Sand, silty sand, and clayey sand have slowly accumulated during past years in stream channels and on the flood plain. This deposition has caused choking of natural channels, the water table to rise in some areas, and has increased the frequency of flooding. These deposits have also been a factor in depreciating stream channel fish habitat. Swamping in the area between the city sewage plant and extending upstream about 1,400 feet has been aggravated by sediment deposition.

Present sediment damage in monetary terms within the watershed is minor. The nature of the deposition, configuration of the flood plain, types of soils, and land use are factors limiting damages to the productive

capacity of the flood plain. Because of obviously limited damages, detailed flood plain investigations and monetary evaluations in regard to presently occurring sediment damage were not made.

It is estimated that 33,740 tons of sediment are yielded annually to the lower end of the watershed. Approximately 50 percent of this yield is considered to be available for bedload within the channel. In terms of sediment concentration in average annual runoff of about 35.56 centimeters (14 inches), this amounts to an estimated 430 milligrams per liter.

The storage capacity of B. A. Steinhagen Lake is being depleted by an estimated 4.3 acre-feet annually by sediment derived from Sandy Creek watershed. The estimated average annual value of this damage is \$1,200 (table 5).

Indirect Damages

Indirect damages such as interruption or delay of travel, rerouting of school buses and mail routes, disruption of forestry operations, business losses in the area, and similar losses are estimated to average \$17,910 annually.

Municipal and Industrial Water

The City of Jasper obtains its municipal and industrial water supply from wells located in the Jasper aquifer. Jasper's present 6,251 population and projected future population of 11,300 by 1992 can be adequately served with the existing system of wells. Water for additional population and development of heavy water-using industries can be met by developing additional wells.

Recreation

Recreational opportunities from fishing in Sandy Creek are limited. This is due to the depressing effect of sediment accumulation and industrial waste in the stream channel on the variety of fish species and their population.

Recreational facilities on B. A. Steinhagen, Sam Rayburn, and Toledo Bend Reservoirs; Angelina and Sabine National Forests; and any that would be developed in Sandy Creek watershed are located within the U.S. Department of Commerce, Office of Business Economics, Area 09133. The present population of this area is 394,705 and is projected to be 599,100 by the year 2,000.

There is no local interest in developing additional water-based recreation within the watershed.

Economic and Social

Additional employment opportunities are needed for the 475 unemployed workers in the county. The population of Jasper increased from 4,839

persons in 1960 to 6,251 persons in 1970, an increase of 27.9 percent. Further increases in population could be anticipated with a concentrated effort in community development and additional employment opportunities.

ENVIRONMENTAL IMPACT

Conservation Land Treatment and Structural Measures

The installation of planned land treatment and structural measures will achieve the project objectives of watershed protection and flood prevention.

The application of the planned land treatment measures will improve the productivity of the soil by reducing erosion and improving the fertility and infiltration properties of the soil. The measures will also reduce downstream floodwater and sediment damages by reducing erosion and the peak rate of runoff from the upland.

Owners and operators within the flood plain will be able to apply management practices due to reduced flooding which result in optimum use of their lands. Timber stand improvement measures will reduce erosion and improve infiltration rates by increasing the quantity of humus and litter on forestland soils. Vigilant protection from fires will aid in retaining protective cover. The measures will also reduce downstream floodwater and sediment damages by the reduction of erosion and runoff from uplands. The recommended method of applying brush control in areas supporting wildlife populations will be to retain units and patterns of brush of good habitat value in favorable locations for use as browse and cover by wildlife. It is not expected that any of the flood plain land will be shifted from forestland or pastureland to cropland.

Application of the planned land treatment is expected to reduce annual gross erosion from 120,500 tons to 53,250 tons, a reduction of approximately 56 percent. The average annual sediment yield to the lower end of the watershed will be reduced from an estimated 16 acre-feet to 5 acre-feet as a result of the planned land treatment and structural measures. Suspended sediment, which is a pollutant and absorbs chemical pollutants such as pesticides, herbicides, fertilizers, etc., will be reduced in average annual runoff of 35.56 centimeters (14 inches) at the mouth of the watershed from an estimated concentration of 430 milligrams per liter to 150 milligrams per liter, a 65 percent reduction.

Sediment originating in the watershed and deposited in B.A. Steinhagen Lake will be reduced by an average of 2.8 acre-feet annually, a 65 percent reduction.

Monetary damages resulting from presently occurring deposition of sediment are minimal because of land use. However, deposition on the flood plain and in stream channels will be reduced by about 65 percent. As a result, the rate at which swamping is occurring and channel capacities are being diminished, will be reduced accordingly.

Installation of the project will have no measurable impact on the ground water resources in the watershed.

The project will provide protection to 1,095 acres of flood plain within the watershed and will benefit directly 15 owners and operators of agricultural land in the flood plain, the owners and occupants of 40 residential units, and the owners or operators of 30 business units in Jasper.

Average annual flooding will be reduced from 859 acres to 640 acres, a reduction of 26 percent. Reduction in area inundated varies with respect to location within the watershed. The general locations of the areas to be benefited as a result of reduced flooding, caused by the combined program of land treatment, structural measures, and floodway, are presented in the following tabulations:

ed <u>1</u> /
:
ut : With :
ct : Project : Reduction
s) (acres) (percent)
101 17
282 28
254 25
3 70
640 26

^{1/} Based on cumulative totals of recurrent flooding expected to occur during the project evaluation period with consideration of floods up to and including the 100-year frequency event.

The number of acres inundated in each evaluation reach without and with the project by various frequency floods is presented in the following tabulation:

Area]	Inundated	by Sele	cted Recu	rrence	Intervals	s (Single	e Storm)	
Recurrence Interval								
Evaluation	:2-Ye	ar	:5-Ye	ear	: 25-Ye	ear	: 100-7	lear
Reach	:Without:	With	:Without:	With	:Without	With	:Without	With
(Appendix C)	:Project:	Project	:Project:	Project	:Project:	Project	:Project:	Project
	(acres)	(acres)	(acres)	(acres)	(acres)	(acres)	(acres)	(acres)
1	74	63	92	77	109	91	117	101
2	231	192	255	198	353	223	410	242
3	239	180	363	264	491	358	536	435
4	6	0	14	5	25	13	32	19
TOTAL	550	435	724	544	978	685	1,095	797
							and the state of	

Average annual flooding in the City of Jasper will be decreased from 390 acres to 282 acres, a reduction of 28 percent. The total area in the watershed flooded by a 100-year storm will be reduced from 1,095 acres to 797 acres, a reduction of 27 percent. The area flooded within the City of Jasper by a 100-year storm will be decreased from 410 acres to 242 acres, a reduction of 41 percent.

The following tabulation shows effects of the project on flood damages by evaluation reaches. All figures indicate average annual reductions:

	Average Annu	al Damage Reduct	ion 1/		
Evaluation	: :	:			
Reach	:	Non-:		1116	
(Appendix C)	: Pasture :	Agricultural:	Sediment :	Total	
9 7 3 2 4 2) = 1	Percent	Percent	Percent	Percent	111
. 1	22.2	-	-	22.2	
2		99.3	- 2	99.3	
3		87.5	1-1	87.5	
4	No Sign	ificant Damages			
B. A. Steinhagen					
Lake		_	65.2	65.2	
Weighted					
Average	22.2	99.3	65.2	98.9	

1/ Reduction based on consideration of floods up to and including the 100-year frequency event.

Had the project been installed at the time of the February 9-10, 1966 flood, acres flooded would have been reduced from about 755 acres to 570 acres, a reduction of 25 percent. Direct monetary damages would have been reduced from an estimated \$59,940 to \$60, a reduction of over 99 percent.

The proposed project will provide flood-free protection from a 100-year frequency event to all existing urban properties except one house located next to Sandy Creek and several streets and utility crossings. The depth in the areas subject to continued flooding from the 100-year frequency flood with project conditions, is a maximum of 1.4 feet above the elevation where damage starts to existing developments with an average depth of approximately 0.5 foot. With the project installed, damages to urban properties from such a flood will be reduced from about \$326,180 to \$5,910. The actions of people during times of floods, whether major or minor, cannot be predicted. However, with any reasonable precautions, the hazard to life from floodwaters will be eliminated. The disruption and relocation of residents during periods of flood threats will be virtually eliminated along with costs necessary for evacuation, emergency shelter, and relief operations.

Analysis of information collected indicated that no significant changes would be made in the use of agricultural land within the flood plain, either in the form of restoration of former productivity or changed land use. There are no alloted crops and no changes are expected.

Indirect damage reduction benefits will accrue to the project. These benefits include the reduction or elimination of expenses associated with interruption or delay of travel, rerouting of school buses and mail routes, disruption of farming and forestry operations, business losses in the area, and similar losses.

During construction of the structural works of improvement, air and water pollution will increase slightly from dust and sediment inherent to the construction process. This increase will be kept within tolerable limits. At the end of construction and with the establishment of vegetation for eroson control, the dust and sediment increase intrinsic to construction operations will have completely subsided.

The installed project is expected to improve fishery resources in the watershed. Land treatment measures will reduce detrimental sediment in streams. The sediment pools of the floodwater retarding structures are expected to provide about 62 additional acres of fish habitat. Proper stocking and management of these impoundments will enable them to provide a significant sport fishing resource. Selective clearing in the floodway area will not affect existing fish habitat. The stream in the proposed floodway area is presently a poor quality habitat and supports a very small amount of sport fishing.

The impoundments in the sediment pools of the retarding structures will provide approximately 62 acres of additional resting habitat for migrating waterfowl. However, the same area which will be inundated, is presently good to excellent bottomland habitat for swamp rabbit, mink, and gray squirrel. The areas occupied by dams or cleared for emergency spillways and borrow excavation in the retarding pools will significantly alter the quality of approximately 85 acres of good to excellent wildlife habitat. This habitat consists of hardwood and pinehardwood communities. Hardwood and pine-hardwood communities comprise about 5,300 acres of the total forestland in the watershed. Also, quality of wildlife habitat in the 108 acre area where the floodway is planned will be reduced. About 200 acres of grassland and 5,300 acres of forestland are expected to receive land treatment during the five-year installation period. Measures that result in reduction in shrubs, vines, grass, and forbs that provide food and cover will adversely affect wildlife. The Cooperative Forest Fire Control Program, which is included in the land treatment, will have a significant effect in protecting and preserving wildlife populations and habitat, in addition to its primary purpose.

The installation of the six floodwater retarding structures and floodway will require the commitment of 636 acres of land to project purposes. Of this acreage, 516 acres are forestland, 10 acres are

presently inundated by water, 2 acres are pastureland, and 108 acres are within the urban area.

After the sediment pools have impounded water to the principal spillway crest elevations, streamflow below the structures will not be significantly effected. The volumes of base flow in the streams under average climatic conditins are sufficient to cause the principal spillways to function continuously and allow similar flow downstream.

There are no archaeological or historic sites listed in or nominated to the National Register of Historic Places that will be affected by the installation of measures included in the project.

Economic and Social

The estimated average annual monetary floodwater and indirect damages within the watershed will be reduced from \$107,540 to \$810. Including sediment damage in B. A. Steinhagen Lake, the damage will be reduced from \$108,740 to \$1,230, a reduction of 98.9 percent.

Benefits to landowners and operators from the planned land treatment measures were not evaluated in monetary terms since experience has shown that conservation practices produce benefits in excess of their costs.

Reduction in monetary flood damages vary with respect to locations within the watershed. The following tabulations show the general locations of average annual damage reduction and benefits attributed to the combined program of land treatment, structural measures, and floodway.

	Average Annu	al Damage		
Evaluation	:	•	:	
Reach	· Control of the cont	: Without	: With :	1/
(Appendix C): Location		: Project :	Reduction 1/
		(dollars) (dollars)	(percent)
_	more left from the control of the		10 1 mg 10 mg	
1	Sandy Creek below City of Jasper	90	70	22.2
2	W.1. A. G	107 070	720	00.0
2	Urban Area - City of Jasper	107,370	730	99.3
3	Sandy Creek above City of Jasper	80	10	87.5
3	Sandy Creek above City of Jasper	80	10	07.5
4	Little Sandy Creek		Insignificant	
-930110	areere bandy oreen		1110101111111111	
_	B. A. Steinhagen Lake (Sediment)	1,200	420	65.0
TOTAL		108,740	1,230	98.9
201110		,	,	

^{1/} Reduction based on consideration of floods up to and including the 100-year frequency event.

Direct Monetary Floodwater Damage at Present Level of Development								
	:	: Recurrence Interval						
Evaluation	: 4-y			ear		year		-year
Reach	:Without	: With :	Without	: With	:Without	: With	:Without	: With
(Appendix C)								
	(dollars)	(dollars)	(dollar	s)(dollar	s)(dollar	s)(dollar	cs)(dollar	cs)(dollar
1	60	50	70	50	100	70	110	90
2	3,030	0	47,770	0	167,370	2,450	326,180	5,910
3	0	0	200	0	430	190	510	330
4			Ins	ignifican	it			
-								
TOTAL	3,090	50	48,040	50	167,900	2,710	326,800	6,330

It is estimated that the project will produce local secondary benefits, which exclude indirect benefits in any form, averaging \$8,380 annually. Secondary benefits, from the installation of a complete project for flood prevention, will accrue in the trade area. The project will create additional employment for local residents. The firms contracting for installation of the floodwater retarding structures will employ some of their employees locally. The operation and maintenance of project measures will also provide employment for local residents. Secondary benefits from a national viewpoint were not considered pertinent to the economic evaluation.

During the construction stage of the proposed project, additional requirements for building materials, petroleum products, and other necessities will stimulate the economy. This construction will create approximately 31 man-years of employment, which will further strengthen the economy during this phase. 1/

The reduction of damages by structural means will provide an impetus for a higher quality of living and social upgrading by watershed residents.

Additional intangible benefits will accrue to the project through the opportunity to shift public funds from the repair of damages to public roads and utilities to investment in schools and other public facilities that improve the quality of living. Likewise private funds now going to repair flood damage can be shifted to raising the standard of living

^{1/} Estimated from an adaptation of An Input-Output Analysis of the Texas Economy Emphasizing Agriculture, Lonnie L. Jones and Gholam Mustafa, Texas A&M University, November 1971.

of the residents in the affected area. The elimination or reduction of flooding will allow owners of residential and business units to upgrade their properties, thereby creating a more pleasant environment in which to live and work. Significant intangible public health benefits will accrue in the City of Jasper, including reduced hazards of loss of life and injury, elimination of health hazards associated with damage to water supply and waste disposal systems, improved vector control, and the prevention of other factors accompanying floods which tend to disrupt the maintenance of public health.

A summary of economic findings is attached as Appendix A.

Jasper County has not been designated as an area eligible for assistance under the Economic Development Act. Consequently, no redevelopment benefits were considered.

FAVORABLE ENVIRONMENTAL EFFECTS

- 1. More than 90 percent of the soil and water conservation measures needed to reduce erosion and retard runoff will be installed.
- 2. The owners and occupants of 40 residential units, 30 business units, and 15 owners and operators of agricultural land will be affected by reduced flooding hazards.
- 3. Damage reduction will be provided for 1,095 acres of flood plain.
- 4. Flood-free protection from a 100-year event will be provided to all existing urban improvements except one house and several streets and utility crossings.
- 5. Damages to urban properties from a 100-year event will be reduced over 99 percent, road and bridge damages outside the urban area 83 percent, and pasture damages 25 percent.
- 6. Costs associated with interruption or delay of travel due to flooding, rerouting of school buses and mail routes, disruption of farming and forestry operations, business losses, etc. will be greatly reduced or eliminated.
- 7. Hazards to life from floodwater will be virtually eliminated.
- 8. Costs necessary for evacuation, emergency shelter, and relief operations for residents in flood prone areas will be to all intents and purposes eliminated.
- 9. Gross erosion in the watershed will be reduced 44 percent after the project is complete.
- 10. Suspended sediment in watershed runoff will be reduced 65 percent.

- 11. Sediment originating in the watershed and deposited in B. A. Steinhagen Lake will be reduced 65 percent.
- 12. Existing fishery resources in the watershed will be improved.
- 13. Approximately 62 acres of additional fish and waterfowl resting habitat will be created.
- 14. Continued forest fire prevention and control will prevent destruction of forestry resources and protect wildlife populations and habitat.
- 15. The purchase of building materials, petroleum products, etc. necessary for construction will stimulate the economy.
- 16. Installation of the structural works of improvement will create about 31 man-years of employment.
- 17. An estimated \$8,380 in increased income to households will be realized annually by the local economy.
- 18. Intangible public health benefits will be realized, such as elimination of hazards associated with damage to water supply and waste disposal systems, improved vector control, and reduction of hazards to loss of life and injury.
- 10. Public funds required for repairing roads and utilities damaged by floods can be shifted to permanent investments that improve the quality of living.

ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

- 1. During construction of the structural works of improvement, air and water pollution will temporarily increase from dust and gediment inherent to the construction process.
- ?. After the project is complete, approximately 62 acres of good to excellent bottomland habitat for swamp rabbit, mink, and gray squirrel will be inundated.
- 3. Approximately 79 acres of good to excellent wildlife habitat will be altered when cleared and subsequently revegetated as dams, emergency spillways, and borrow areas.
- 4. Wildlife habitat in the 108 acre floodway will be reduced for most species of wildlife except squirrels and possibly doves. Browse and cover for most species will be reduced.
- 5. There will be a loss of forest production from the 516 acres to be cleared for dams, emergency spillways, borrow areas, and sediment pools.

ALTERNATIVES

The considered alternatives to the proposed project action were: (1) a program of applying land treatment for watershed protection; (2) land treatment and flood plain zoning; (3) land treatment and floodproofing; (4) land treatment and flood insurance; (5) land treatment and relocation; (6) land treatment and a combination of flood plain zoning, floodproofing, and relocation; (7) land treatment and channel work; and (8) foregoing the implementation of a project.

A discussion of each alternative follows:

Alternative No. 1 - Alternative No. 1 consisted of applying land treatment measures as proposed in the project action. Average annual floodwater, sediment, and indirect damages would be reduced from \$108,740 to \$102,170, or a reduction of 6.0 percent. Depth of flooding from the one percent chance flood event would be reduced in the urban area of Jasper approximately 0.2 foot. The volume of sediment delivered annually to the mouth of the watershed would be reduced from 16 acre-feet to 9 acre-feet, a reduction of 44 percent. The adverse impacts that would be caused by installation of the floodwater retarding structures would be eliminated. The estimated cost of this alternative would be \$159,210.

Alternative No. 2 - Alternative No. 2 consisted of land treatment and flood plain zoning.

The city of Jasper would restrict new construction or any major modification within the flood hazard area by zoning. This would prevent flood problems from increasing, but would not alleviate the existing problem. Floodwater and indirect damages to urban properties would continue at an average rate of about \$100,000 annually. This alternative would eliminate the loss of wildlife habitat resulting from project installation while allowing the continued deterioration of natural and human resources caused by the floodwaters.

Alternative No. 3 - Alternative No. 3 consisted of land treatment and floodproofing.

Detailed studies of each residential or commercial unit to determine the structural feasibility of each unit was not practical. However, a general review of each property in relation to the flood depths that would have to be protected against indicated that 33 residential units and 16 commercial units could possibly be floodproofed satisfactorily. The cost of such floodproofing is estimated to be about \$410,000. This alternative would alleviate the major damages to units floodproofed. Floodproofing of seven residential units and 14 commercial units would not be practical because of structural stability and design or excessive flood depths that would have to be protected against. Damages to streets, highways, water and

sewer mains, and other vital utilities would remain the same. Average annual floodwater and indirect damages remaining under this alternative would be about \$55,100. This alternative would eliminate the loss of wildlife habitat resulting from project installation but would allow much of the deterioration of natural and human resources caused by flooding to continue. Estimated total cost of this alternative is \$569,210.

Alternative No. 4 - Alternative No. 4 consisted of land treatment and flood insurance.

Flood insurance could be made available to reduce the economic impact to an individual or business. However, flood insurance will not reduce the existing losses; it simply spreads them out over a larger segment of society and for a longer period of time. In the long run the total costs to society are probably higher because of the added cost of administration.

Alternative No. 5 - Alternative No. 5 consisted of land treatment and relocation of all residential and commercial property out of the flood hazard area.

The city of Jasper could purchase all property within the 100-year flood prone area and relocate all homes and businesses. The estimated cost would be about \$2,700,000. It would be impractical to relocate streets, railroads, bridges, water and sewer lines and other utilities Average damages to such public properties would still remain at about \$14,100 annually. As in other nonstructural alternatives, the commitment of resources required for project measures would be eliminated. However, the relocation of 70 residential and commercial units would require a commitment of an undetermined acreage of land and habitat resources. The estimated total cost of this alternative is \$2,859,210.

Alternative No. 6 - Alternative No. 6 consisted of a combination of land treatment measures, flood plain zoning, floodproofing, and relocation.

The City would zone the flood hazard area to prevent any new construction or major modification. An estimated 49 residential units could be floodproofed. The City would purchase and relocate seven residential and 14 commercial units outside of the flood hazard area. This would eliminate all major damages to residential and commercial property. Damages to public properties would continue to average about \$14,100 annually.

The requirement of land and habitat resources needed for project installation would be eliminated as well as the adverse impacts directly attributable to the commitment of required resources. The relocation of 21 residential and commercial units would require the commitment of an undetermined acreage of land and habitat resources.

The cost of this alternative is estimated to be \$1,479,210, of which \$159,210 is for land treatment, \$400,000 is for floodproofing, and \$910,000 is for relocation.

Alternative No. 7 - Alternative No. 7 consisted of applying land treatment and channel work. The land treatment measures would be the same as in the proposed action. The channel work would consist of increasing the capacity of 2.9 miles of the main stem Sandy Creek channel through the urban area of Jasper. The channel would require concrete lining due to slope gradients, capacity requirements, and expected channel velocities.

The concrete lining would eliminate the fishery habitat on 2.9 miles of stream. Fish and wildlife habitat would be lost on about 70 acres of land.

This channel work would require about 70 acres of land through the urban area, and the replacement or modification of four bridge crossings, one railroad bridge, and numerous utility installations. The channel work would not reduce flooding on the agricultural flood plain. The estimated cost of this alternative is \$7,527,260, consisting of \$159,210 for land treatment and \$7,368,050 for channel work.

Alternative No. 8 - Alternative No. 8 consisted of foregoing the implementation of a project.

Foregoing any type of project action would result in continued flood damage to urban and agricultural areas. There would be a reduction in priority of technical assistance to watershed land users which would delay the installation of land treatment. This would have an adverse effect on forestland ecosystems and reduce the ability of these systems to support timber production for lumber and wood products industries. Wildlife resources could also be adversely affected. It is reasonable to expect, however, that land users would eventually implement land treatment to maintain the productivity of their lands. Erosion and resultant sediment deposition would continue. The deterioration of the flood plain from sediment deposition and

resultant high water tables would continue until the cumulative effects of this damage forced land use conversion to even less productive uses.

The need to use 636 acres of land required to construct the floodwater retarding structures and modified floodway would be eliminated.

The creation of 62 acres of surface water which could be used for fish and waterfowl resting habitat would be foregone.

The opportunity to realize about 50,950 in average annual net benefits would be foregone.

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Most of the land in the watershed is used for timber production and is not expected to change. The overall projected land use in the watershed at the end of the project installation period is as follows:

Land Use	Acres	Percent
Forestland	20,080	80.3
Pastureland	800	3.2
Miscellaneous *	4,120	16.5
Total	25,000	100.0

^{*} Roads, highways, farmsteads, urban areas, stream channels, floodwater retarding structures, etc.

The Sandy Creek watershed project is within the Neches River Basin. The Neches River Basin is bounded on the north and east by the Sabine River Basin, on the west by the Trinity River Basin, and on the south by the Neches-Trinity Coastal Basin. It rises in southeastern Van Zandt County near Tyler at an elevation of about 600 feet, and flows southeastward 416 miles to Sabine Lake near Beaumont. The principal tributary, the Angelina River, joins the main stem about 125 miles above its mouth. The basin ranges in width from 8 miles near the mouth to 70 miles in the central portion and is more than 200 miles long. The total drainage area at the mouth is about 10,011 square miles. Annual rainfall ranges from an average of about 41 inches in the northern part of the basin to 55 inches in the south, averaging about 48 inches annually. Average annual runoff in the Neches River Basin ranges from a maximum of about 1,000 acre-feet per square mile near its mouth to about 400 acre-feet per square mile in the northwestern part of the basin. Runoff decreases more or less uniformly from east to west, corresponding with the pattern of rainfall.

There are 35 watersheds located in the Neches River Basin on which watershed projects have been investigated. Of these, eight watershed projects have been installed, approved for operations, or appear to be feasible for planning. One of the projects is in the process of being installed, one is currently being planned, and six appear to be feasible for planning. The total drainage area of the eight watersheds is about 1,750 square miles. The drainage area of these watersheds is about 17 percent of the drainage area of the Neches River Basin. Of the six watersheds which appear to be feasible, no applications for planning assistance have been made to the Texas State Soil and Water Conservation Board.

There are 22 floodwater retarding structures, 1 multiple-purpose structure, and 49 miles of channel work constructed or planned in the 1 watershed project that is approved for operations. It is estimated that if all the remaining projects that appear feasible were installed, a total of about 113 floodwater retarding structures would be constructed and 32 miles of channel work and 3 miles of floodway would be installed in the basin.

The Texas Water Plan (Summary) indicated that in 1968 there were nine reservoirs either existing or under construction which have total capacities of 5,000 acre-feet or more. These nine reservoirs have a combined conservation storage capacity of 3,550,400 acre-feet covering an area of 163,670 acres. Eight of the reservoirs are primarily for water conservation and one has additional purposes of flood control and hydroelectric power generation. Based on the report of the U.S. Study Commission-Texas, there are about 24 reservoirs, excluding structures

^{1/} The Texas Water Plan, Texas Water Development Board, November 1968

installed under the watershed program, in the basin with capacities of less than 5,000 acre-feet. They are primarily for municipal, industrial, recreation, and irrigation purposes and have a total capacity of about 17,500 acre-feet.

Sandy Creek enters B. A. Steinhagen Lake. The Angelina and Neches Rivers join at B. A. Steinhagen Lake. Located upstream, on the Angelina River, is Sam Rayburn Reservoir, largest reservoir in the Neches River Basin (2,852,600 acre-feet and surface area of 114,550 acres at conservation storage). 1/

Any cumulative effects resulting from the installation of a project on Sandy Creek watershed on the streamflow of the Neches River will be associated only with other watershed projects that enter the Neches River above B. A. Steinhagen Lake and below Sam Rayburn Reservoir. The total intervening drainage area between the two reservoirs is 4,124 square miles. There are no other watershed projects impacting on this river reach that have been authorized for planning or operations. Sandy Creek watershed, with its six planned floodwater retarding structures will have a total drainage area controlled of 11.98 square miles, or 0.29 percent of the total contributing area above B. A. Steinhagen Lake and below Sam Rayburn Reservoir. It is estimated that there will be no cumulative decrease in average annual runoff to B. A. Steinhagen Lake. One project is presently being installed above Sam Rayburn Reservoir and it has 22 floodwater retarding structures and one multiple purpose structure controlling 150.20 square miles of drainage area.

It is anticipated that the works of improvement proposed in this project, along with works of improvement in the projects which are authorized for construction, will have significant impacts on the quality of the human environment. The long-term cumulative impacts of the projects in the Neches River Basin and the region are as follows: (1) the works of improvement, both land treatment and structural, will help contribute to conservation, development, and productive use of the soil, water, and related resources; (2) the projects will allow the productivity of the resources to be sustained economically and indefinitely; (3) the standard of living of the residents of the region will be improved through added income; (4) the projects will restrict the use on the land needed for installation of the works of improvement; (5) until impounded water is displaced by sediment, vegetation will be destroyed on areas to be dedicated for sediment storage; (6) vegetation will be temporarily disturbed on areas needed for construction of dams and emergency spillways. This could affect the wildlife in the immediate site areas. However, the overall habitat conditions are expected to become more favorable as a result of a more dependable food and water supply and better management

^{1/} Dams and Reservoirs in Texas, Texas Water Development Board Report 48, December 31, 1966

techniques; (7) the 62 acres of surface water that will be created by this project and the 8,827 acres of surface water that will be created by the one project being installed will provide a total of 8,896 acres of surface water which can be used for recreation, lake fisheries, waterfowl resting areas, etc.

The long-term habitatility and contribution to the economic well-being of the area will be improved with only minimal detriment to a few features of the existing environment. In total, the natural environment and aesthetic values of the area will be benefited over those that would exist in the long-term without project measures.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS

Installation of the project will require the use of 636 acres of land. The dams, emergency spillways, and sediment pools will require 148 acres of which 139 acres are forestland, two acres are pastureland, and seven acres are land presently inundated by small ponds. The floodwater detention pools will require an additional 380 acres which are subject to temporary inundation by floodwater. This area includes 377 acres of forestland and three acres presently inundated with water. The floodway will require 108 acres, all of which is within the City of Jasper.

Installation of the project will also require the commitment of labor, materials, and energy for construction.

No other commitment of resources is known to be required for this project.

CONSULTATION AND REVIEW WITH APPROPRIATE AGENCIES AND OTHERS

The plan was developed in full consultation and cooperation with all interested agencies, individuals and the public in general. Prior to the initiation of planning and during the planning phase, informational meetings were held. These meetings were conducted in the watershed by local sponsoring organizations: The initial meeting, held in Jasper, Texas, was attended by interested citizens, representatives of local organizations, and landowners. The purpose of this meeting was to determine public support for a watershed project before submitting an application for planning assistance to the Texas State Soil and Water Conservation Board.

The local organizing group identified watershed problems, located problem areas, and delineated the Sandy Creek watershed boundaries. This group determined that multiple sponsorship was needed to represent the diversity of interests within the watershed. The project would require cash outlays by the sponsoring local organization responsible for installation, operating, and maintaining completed structural measures.

They recognized it was essential that the proposed project have adequate sponsorship by qualified organizations. With public endorsement by those present, an application for planning assistance was prepared and submitted to the Texas State Soil and Water Conservation Board by organizations interested in sponsoring the application.

Subsequent to approval of the application, a field examination of Sandy Creek watershed was made by the Texas State Soil and Water Conservation Board and Soil Conservation Service to make an appraisal of the watershed problems, types of improvements necessary for watershed protection and flood prevention, the quality of human environment, and the effects of possible works of improvement on the environment. The findings of the field examination were publicly discussed at a meeting held for this purpose at Jasper, Texas.

A tour of Sandy Creek watershed and a public hearing was held by the Texas State Soil and Water Conservation Board in Jasper, Texas in May 1963. The tour and hearing provided assurance to the Board members that the watershed features were within the scope of Public Law 566; that existing watershed conditions warranted planning assistance; the public reaction was in support of a watershed project; and the sponsoring local organizations had the ability and willingness to fulfill future responsibilities for a watershed project. The Texas State Soil and Water Conservation Board approved the application with a high priority for planning assistance.

The Sandy Creek watershed application for assistance under Public Law 566, as amended, was authorized for planning by the Administrator of the Soil Conservation Service in February 1970. The State Conservationist of the Soil Conservation Service, in his written notification of initiation of work plan development, solicited information and comments from 32 federal, state, and local agencies that might have an interest in the project. Contacts were made with several agencies and individuals during planning to obtain information and assistance during the planning process.

The planning application for Sandy Creek watershed was made prior to the implementation of notification, Bureau of the Budget Circular A-95, however the sponsors provided the Deep East Texas Development Council of Governments with notification of intent to apply for a project involving federal funds prior to the start of field planning operations.

Representatives of the Texas Forest Service and the U.S. Forest Service made reconnaissance studies of the watershed and provided recommendations and goals for implementation for land treatment measures on forest-land in the watershed.

Representatives of the U. S. Fish and Wildlife Service, U. S. Department of Interior, and the Texas Parks and Wildlife Department made joint studies with biologists from the Soil Conservation Service. They described the fish and wildlife resources in the project, the effects

of the project, and recommendations for maintaining, and enhancing the fish and wildlife resources of the watershed.

Representatives of Southern Methodist University made an archeological assessment on the six planned floodwater retarding structure sites.

Texas State Health Department representatives were contacted during the planning process to obtain their expressions in regard to the present and the future plans for improving the Jasper sewage treatment plant and the effluent releases.

Newspapers serving the watershed area published articles announcing public meetings and reported information and conclusions resulting from the meetings. In addition, the individuals whose land was directly involved with proposed works of improvement were notified and invited on an individual basis to attend meetings.

Meetings with the sponsoring local organizations and the steering committee were held during the planning process to coordinate, exchange information, evaluate alternatives, and reach agreements on a system of measures that would serve the needs of the people and the watershed resources.

On January 21, 1975, prior to the preparation of the final plan, a public information meeting was held in Jasper, Texas. The proposed project and the environmental impact statement were discussed and interested agencies and individuals were given the opportunity to present their views and recommendations, either orally or in writing. The plan and environmental impact statement were prepared considering comments and recommendations offered by the agencies or other interested individuals or groups who reviewed the plan.

The following federal agencies were requested to review and submit comments and recommendations:

U.S. Department of the Army

U.S. Department of Commerce

U.S. Department of Health, Education, and Welfare

U.S. Department of the Interior

Enviornmental Protection Agency

Federal Power Commission

U.S. Department of Transportation

Advisory Council on Historic Preservation

Office of Equal Opportunity

The following state and local agencies were requested to review and submit comments and recommendations:

Division of Planning Coordination (State agency designated by Governor and State Clearinghouse) Deep East Texas Development Council

The following organizations were provided informational copies of the Draft Environmental Impact Statement:

Natural Resource Defense Council Friends of the Earth Environmental Defense Fund National Wildlife Federation National Audubon Society Environmentatl Impact Assessment Project

Discussion and Disposition of Each Comment on Draft Environmental Impact Statement

All of the agencies requested to comment on the Draft Environmental Impact Statement submitted comments except the U. S. Department of Commerce, Federal Power Commission, and the Office of Equal Opportunity. In addition, the National Audubon Society submitted comments. The respondents comments and the disposition of each are as follows:

U.S. Department of the Army

Comment:

The Department stated that it could foresee no conflict with any projects or current proposals of the Department and that it considered the Draft Environmental Impact Statement to be satisfactory.

Response: Noted

U.S. Department of Health, Education and Welfare

Comment:

The Department stated that its review of the Draft Environmental Impact Statement Statement for the project discerned no adverse effects that might be of significance where its program responsibilities and standards pertain, provided that appropriate guides are followed in concert with State, County, and local environmental laws and regulations. The Department had no objections to the authorization of the project insofar as its interests and responsibilities were concerned.

Response: Noted

U.S. Department of Interior

Comment:

The Department stated that the work plan is a commendable effort to reduce or minimize fish and wildlife habitat losses, particularly by revegetating with multiple use plants and planting woody and seed-bearing vegetation on idle lands, fence rows, and around stock ponds to provide food and cover for wildlife.

Response: Noted

Sandy Creek Watershed

Comment:

The Department stated that the floodway is more esthetic and much less damaging to fish and wildlife resources than channelization, but that the Draft Work Plan did not indicate the adverse effects on fishery resources of removing fallen trees and logs from the stream which contribute to the diversity of the stream habitat and provide sheltered areas for food organisms as well as protecting resting areas for fish.

Response:

The removal of fallen trees and logs from within the channel area is not expected to adversely affect fishery resources. Fallen trees and logs within the total channel cross section do not occur in great numbers and the majority of these are not submerged or in the actual channel flow but lay either across or along the channel above the water elevation. Our evaluation of the impact is supported by the report of the Fish and Wildife Service, dated August 24, 1972. The second paragraph of page 4 states, "Channel alterations would not destroy fish habitat of importance. Those reaches of stream to be channelized are of poor quality and support insignificant amounts of sport fishing."

Comment:

The Department stated: "The components of the environmental quality objective reflect economic development, regional development, and social well-being components which should appear in their respective plans or accounts. An example would be using flood control as a component of the environmental objective. To stop the flooding of a flood plain would contribute to the destruction of the very environment that should be conserved under the environmental quality plan. The natural flood plain ecosystem exists because of and not in spite of periodic flooding. According to the Principles and Standards for Planning Water and Related Land Resources, Federal Register, Vol. 38, No. 174, page 33, '...the environmental objective reflects man's abiding concern with the quality of the natural physical-biological system in which all of life is sustained.' Man-made dams are not 'natural'.

"Some examples of this appearing in the report are as follows:

"Page A-7, No. A-1. 'Project output will make available regional funds and resources that can be used to enhance the physical appearance of 15 agricultural units on 685 acres of agricultural flood plain and 30 businesses and 40 residential properties on 410 acres of urban flood plain.'

"Page A-11, No. 5. 'Creating additional habitat for fish.'
Instead of creating new habitat, it is substitute habitat
resulting from destruction of the existing stream habitat.

"The summary of environmental effects resulting from the installation of the environmental plan lists several similar statements. Examples are page A-7, Nos. A-2, B-1, B-2, B-3, D-2; page A-8, second paragraph; page A-9, second paragraph; page A-10, Nos. 2-f and 2-g; page A-11, No. 3; page A-14, No. 1-a; and page A-15, Nos. 2-e and 2-f.

"We recommend that the Environmental Quality Plan only contain objectives concerned with the quality of the 'natural environment' as stated by the Principles and Standards for Planning Water and Related Land Resources."

Response:

An introduction has been added to the three part Addendum which sets forth the purpose of the Addendum and also explains the formulation of the "Abbreviated Environmental Quality Plan." No change has been made in the "Abbreviated Environmental Quality Plan Part III." The plan was formulated in accordance with the Soil Conservation Service's interpretation of the Water Resource Council's guidelines, in which the Environmental Quality Plan can and should provide national economic development, regional development, and social well-being effects that are incidental and do not detract from the environmental quality objective.

The "Environmental Quality Account" of the selected plan as displayed in Part II of the Addendum has been revised to delete measure of effects related to national economic development, regional development, and social well-being.

The statement referenced to the cited example Page A-11, No 5, which reads, "Instead of creating new habitat, it is substitute habitat resulting from destruction of the existing stream habitat.", is incorrect. The additional surface water created by the sediment pools of the floodwater retarding structure is additional habitat for fish, not substitute habitat. The planned structural measures do not destroy any of the existing stream fishery habitat.

Comment:

The Department stated it believes there should be a clear distinction between the reduction of average annual damages (\$107,510) and the average annual damage reduction benefits (\$100,940), and that the headings and figures of Table 5 and 6 do not clarify the meanings.

Response:

The average annual damage reduction benefits (\$107,510) as shown on Table 5 reflects the total average annual benefits that are expected to accrue from the installation of planned land treatment measures and structural measures. The average annual damage reduction benefits, \$100,940 that appears on Table 6, reflects only those benefits expected to accrue to the structural measures. The difference of \$6,750 between

Tables 5 and 6 are benefits expected to accrue to planned land treatment measures. This amount is shown as footnote 3 on Table 6 and resolves the difference between the tables.

Comment: The Department believes the elevation shown in the sixth paragraph of page 4 should be rechecked.

Response: The elevations have been rechecked and an error noted. The correct elevations range from approximately 520 feet above mean sea level along the northern boundary of the watershed to about 180 feet at the mouth of the watershed. These changes have been made in the Work Plan and Environmental Impact Statement.

Comment: The Department stated the Draft Work Plan and Draft Environmental Impact Statement indicate that timber production is the major industry within the watershed, and forestry-and related wood using industries comprise the primary economic base within the watershed. However, on page 64 of the Draft Work Plan, it is stated that "No production in the sediment pools was considered and the land covered by the detention pool was assumed to be forestland under project conditions. The annual value of the loss of net income from these areas was less than the amortized value of the land; therefore, the easement value was used in economic justification." The Department believes the value of foregone production should be considered in assessing project costs. This should include an evaluation of the extent and three successive timber crops which will be foregone if the project is constructed. It is not clear if the foregone values of this timber production and pasture have been considered in the computation of the project This could be clarified in the Work Plan. costs.

Response: The total net value of all production lost as a result of project installation was calculated. This value was compared to the amortized annual value of the land required for installation. The larger value was used in arriving at project costs. The discussion relevant to these considerations, as shown on page 64 of the Draft Work Plan, has been expanded for clarification.

Comment: The Department stated that two sections of the Draft Work Plan include differing percentages as to the amount of present land treatment measures established and those to be completed by the end of the project installation period. It recommended these differences be resolved.

Response: The percentage of land treatment measures established is estimated to be 62 percent. The goal is to increase the level of land treatment application to at least 90 percent of total needs during the installation period. The percentages shown established in the Work Plan and Environmental Impact Statement have been changed accordingly.

Comment: The Department believes that it would be helpful to add a note as to why a 25 percent reduction in area flooded results in a 99 percent reduction in flood damages.

Response: As shown in Table 5 of the Work Plan and discussed in the narrative portion of the plan, nearly all of the direct floodwater damages are to urban properties within the city of Jasper. There is no direct relationship between area inundated and floodwater damages because of the location and elevation of the existing urban properties. Damages to the urban properties are directly related to floodwater elevations.

Comment: The Department stated the Draft Environmental Impact Statement is essentially a reorganized word-for-word duplication of the Draft Work Plan. The reports are sometimes redundant. For example, the discussion of environmental impacts of the proposed project is contained on pages 35 through 39 of the Draft Environmental Impact Statement and is followed by a listing of these impacts on pages 39 and 40. Even within the listing there is redundancy because statements 5, 6, 8 and 19 are merely restatements of the basic project objectives. Statements 9, 10, and 11 declare the same beneficial impact three different ways. It suggested an editing of these sections to eliminate unnecessary duplication.

Response: It is agreed that there is considerable duplication between the Work Plan and the Environmental Impact Statement. The plan and statement were developed under the premise that each document should be complete enough to stand on its own.

The discussion of environmental impacts as included from page 33 to page 39 of the Draft Environmental Impact Statement are under the heading, "Environmental Impact." This section discusses each impact of the project in detail without categorizing as to favorable or adverse. The section, "Favorable Environmental Effects," (page 39), and the section, "Adverse Environmental Effects Which Cannot be Avoided" (page 40), categorizes the impacts. This format is in accordance with Department of Agriculture, Soil Conservation Service, guidelines for preparations of environmental impact statements as published in the Federal Register, June 3, 1974.

We do not believe there is a redundancy in the inclusion of items 5, 6, 8, and 19 included in the section entitled, "Favorable Environmental Effects." While these items appear also as project objectives, they indicate the impacts that result from meeting the objectives.

We believe it is correct to list items 9, 10, and 11 as separate and distinct impacts. While each of these impacts have their origin in a reduction of erosion, the ultimate impact is distinctly different as to its location and environmental problem it reduces.

Comment:

The Department stated: "A number of alternatives are briefly described. Since exact figures of their costs are given, it appears that they were studied in considerable detail. However, there is little or no assessment of desirable and undesirable features of the alternatives which would lead to a reasoned choice of the project as proposed. It is also noted that while cost figures of those alternatives not chosen are easy to find in the statement, comparable cost figures for the proposed project are difficult to find."

Response:

Assessments of all desirable and undesirable features or impacts of the alternates not chosen were not made in the same degree of detail as the selected plan. Assessments and evaluations of each alternate were carried only to the point necessary to determine that another alternative had more desirable effects or less undesirable effects, that it would or would not meet project objectives, that it was or was not within the implementation authorities available under Public Law 566, or that the financial requirements were or were not within the capabilities of potential sponsoring local organizations.

Total costs of the proposed project are prominently displayed on page 20 of the draft environmental impact statement. Average annual project costs are shown in Appendix A.

Comment:

The Department stated: "The Draft Environmental Impact Statement presents an adequate analysis of the project impact on wildlife. However, the impact statement does not indicate the adverse effects on fishery resources of removing fallen trees and logs from the stream, which contribute to the diversity of the stream habitat and provide sheltered areas for food organisms as well as protection and resting areas for fish."

Response:

The removal of fallen trees and logs from the stream will not result in any significant impact either favorable or adverse on fishery resources. The report of the Fish and Wildlife Service dated August 24, 1972, on page 4 states, "Channel

alterations would not destroy fish habitat of importance. Those reaches of stream to be channelized are of poor quality and support insignificant amounts of sport fishing."

Comment: The Department suggested correlating the percentages shown on page 1 as item 1 with those given on page 4, paragraph 3.

Response: The percentage of land treatment measures established is estimated to be 62 percent. The goal is to increase the level of land treatment application to at least 90 percent of total needs during the installation period. The percentages shown established in the work plan and environmental impact statement have been changed accordingly.

Comment: The Department stated: "The emergency spillways for the flood control structures are not described, but are said to be 'excavated in materials having a high potential for erosion.' Since there is no indication that a lining would be provided, it must be questioned whether erosion of the spillways during an extremely severe flood could lead to a washout breaching the dam. The probability of a flood reaching the emergency spillways is given as 0.25 percent in any year for each of the structures and thus is very low. Nevertheless, over the proposed 100-year life of the project, even this low probability becomes significant. Therefore, the performance of of the spillways when needed should be further described."

Response: We do not believe that further discussion relative to the performance of spillways, should they ever function, is necessary. As pointed out, the erosion hazard has been recognized. Every practical design consideration has been included to minimize potential spillway erosion. There is no reason to predict that spillway flow would cause erosion damage which would effect the structural integrity of either the spillway or embankment.

Comment: The Department stated: "It is noted that flood-free protection will be provided from a 100-year event for all existing urban improvements except one house. However, floods greater than a 100-year event can occur. The effects of such floods on the urban flood prone area that might otherwise be thought of as free from floods should be described in the statement."

Response: It is recognized fully that floods larger than those having a 100-year frequency can occur and cause damage to urban properties. We do not believe, however, that a description of the effects of a flood or floods larger than the 100-year frequency event would be meaningful. The array of statistical probabilities that could be described are virtually unlimited.

Comment:

The Department stated that according to the Draft Environmental Impact Statement, ground water is the source of supply for the community of Jasper as well as for rural, domestic, and livestock use. They further stated that in neither the Environmental Impact Statement nor the Work Plan have the impacts on ground water either of flooding or of the proposed project been considered. In addition, swamping caused by sediment accumulation, consequent rise of water table, and increase in probability of flooding are mentioned in the Draft Environmental Impact Statement (page 31) for the area of the Jasper city sewage plant. The Environmental Impact Statement should address the impacts of this situation and of the project effects on it.

Response:

Statements relative to the referenced impacts have been added to both the Work Plan and the Environmental Impact Statement.

Comment:

The Department stated it could not follow the calculations of 4.3 acre-feet of sediment deposited to 65 percent reduction of sediment deposited as amounting to 3.8 acre-feet, the figure shown on page 33, paragraph 5, and that this difference should be clarified.

Response:

The 3.8 acre-feet sediment deposited was a typographical error and should have been 2.8. Corrections have been made.

Comment:

The Department stated that it believes that it should be made clear that the average annual area inundated consists of a sum of more than one flood. They added that likewise, it should be noted that the area inundated by selected recurrence intervals is for a single storm in each area.

Response:

The definition of average annual area inundated was given in the discussion of Floodwater Damages on page 11 of the Draft Work Plan and page 30 of the Draft Environmental Impact Statement. However, for further clarification, appropriate footnotes have been added to the related tabulations in both the Work Plan and Environmental Impact Statement.

Comment:

The Department stated that the following statements in the Draft Work Plan are apparently contradictory: (1) "The installation of the six floodwater retarding structures and floodway will require the commitment of 636 acres of land to project purposes. Of this acreage, 516 acres are forestlands...." and on page 29 of the Draft Work Plan (2) "Installation of the floodwater retarding structures will require 528 acres of land which includes 516 acres of forestland...." It added that these apparently contradictory statements do agree that 516 acres of forestland will be committed to the proposed project.

Response: The six floodwater retarding structures require 528 acres.

The floodway requires 108 acres. The total acres is 636

acres as stated.

Environmental Protection Agency

Comment: The Environmental Protection Agency stated that it had no objections to the proposed plan and that the Soil Conservation

Service had presented an adequate discussion of the impacts of the project and the available alternatives. It classified

the Draft Environmental Impact Statement as LO-1.

Response: Noted

U.S. Department of Transportation

Comment: The Department stated that it had no comments to offer, nor

did it have any objection to the project.

Response: Noted

Advisory Council on Historic Preservation

Comment: The Council stated that the Draft Environmental Impact State-

ment and the Watershed Work Plan appeared adequate regarding their area of expertise and the council had no further comment

to make on the undertaking at this time.

Response: Noted

Comment: The Council stated that it would like to call attention to what it believed to be confusing statements in the documents

concerning demonstration of compliance with Section 106 of the National Historic Preservation Act of 1966 and the provisions of Executive Order 11593 "Protection and

Enhancement of the Cultural Environment" of May 13, 1971, in accordance with the "Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R. Part 800).

The Council made reference to sections in the Draft Environmental Impact Statement and Draft Watershed Work Plan which indicate no properties included in or eligible for inclusion

in the National Register of Historic Places will be affected by the project while other statements indicated that no properties included in or eligible for inclusion in the National Register will be adversely affected by the undertaking. The Council further stated that "Apparently the

Soil Conservation Service (SCS) is unaware of the distinction made by the procedures between 'no effect' and 'no adverse effect'. Pursuant to Section 106 and Executive Order 11593,

if an undertaking results in an effect, beneficial or adverse,

the Federal agency is required to afford the Council an opportunity to comment on the undertaking."

Response:

Inasmuch as the project has no effect on any properties included in or eligible for inclusion in the National Register, the word "adversely" has been deleted in all discussions relative to this subject in both the Environmental Impact Statement and the Watershed Work Plan.

Office of the Governor, Division of Planning Coordination

Comment:

The Division of Planning Coordination stated that review participants generally supported the project proposals. Letters of comments from the various State agencies who reviewed the Draft Work Plan and Draft Environmental Impact Statement were enclosed.

Response:

Noted. Comments of the review participants and responses are as follows:

Texas Water Rights Commission

Comment:

The Commission stated: "By letter of December 17, 1974, the Commission staff submitted detailed review comments on the November 1974 drafts of the Draft Watershed Work Plan and Draft Environmental Impact Statement. The Commission staff's December 17, 1974, comments were transmitted by the Director, Governor's Division of Planning Coordination, to the State Conservationist by letter of January 20, 1975. The extent to which the Commission's earlier comments were considered by the Soil Conservation Service is not readily apparent in the March 1975 versions of the Draft Watershed Work PLan and the Draft Environmental Impact Statement. Therefore, the staff asserts that the earlier comments still are considered valid, and suggests that the Soil Conservation Service advise the staff of the action taken on earlier review comments in the interest of attaining better communication and continuity in interagency coordination. Unless this mutual interchange is maintained, the practice of periodic reviews is of doubtful value insofar as effective, continuing planning efforts are concerned."

Response:

The referenced "Draft Watershed Work Plan and Environmental Impact Statement" were preliminary drafts transmitted to the Commission for informal review. The Commission's comments and suggestions were considered fully, however, changes to the work plan or environmental impact statement were not considered necessary. Subsequent to receipt of the Commission's comments on the Draft Work Plan and Draft Environmental Impact Statement

transmitted from interagency review, Soil Conservation Service personnel met with Commission staff members to discuss the December 17, 1974 comments and their disposition. The Soil Conservation Service's position relative to the preliminary draft comments was concurred in by the Commission.

Comment:

The Commission stated that it believes the abbreviated analysis based on the 1973 Water Resources Council's Principles and Standards for Planning Water and Related Land Resources (38 FR 24778, September 10, 1973) enhances the justification of the structural component of the project. Some explanation would be desirable as to why the abbreviated analysis in the Addendum was limited essentially to the structural component (i.e., six floodwater retarding structures, and a 2.9-mile floodway); and, why land treatment and other nonstructural elements of the project were excluded from the analysis outlined in the Addendum.

The staff believes the intergrated project should be considered. In this regard, attention is invited to the following from a report by Mr. Joseph W. Hass, of the Soil Conservation Service.

"Watershed projects are no single structure or reservoir proposals. Rather they consist of a variety of measures to be installed within a project area. The first increment considered is always 'land treatment,' the application of conservation practices on cropland or other areas... In combination with land treatment, various structural works of improvement are analyzed,... Generally, the reduction of flood damage is of primary importance... Channel improvement is sometimes needed where enough floodwater storage is not available or dams are not feasible....

Thus a single watershed project may include several manmade lakes and many other measures to create a development responsive to the stated needs and conducive to environmental protection..." (Emphasis added; page 744.)

Response:

The Soil Conservation Service has recognized that the purpose of the Addendum and its relationship to the proposed project plan was not explained adequately in the Draft Watershed Work Plan. Accordingly, an introduction has been added to the three part Addendum which sets forth the purpose of the Addendum and also explains the formulation of the "Abbreviated Environmental Quality Plan."

Comment:

The Commission stated that a 65 percent reduction of sedimentation in B.A. Steinhagen Reservoir from the present estimated 4.3 acrefeet annually (Draft Environmental Impact Statement, page 32) to

about 0.5 acre-feet annually (i.e., an average annual reduction of 3.8 acre-feet shown on page 33 of the Draft Environmental Impact Statement) represents a greater average annual benefit than implied on page 32 of the Draft Environmental Impact Statement. Also, this reduction in sedimentation should be quantified and included in the Regional Development Account rather than the Environmental Quality Account of the Addendum.

Response:

The 3.8 acre-feet sediment reduction discussed on page 33 of the Draft Environmental Impact Statement is in error and should be 2.8 acre-feet. The 2.8 acre-feet reduction is 65 percent less than the present 4.3 average annual rate.

In regard to quantifying the sediment reduction, this has been done and is shown on Table 5 of the Work Plan. The average annual benefits in monetary terms have been included in the net beneficial effects of the Regional Development Account of the Addendum. The "improvement" has not been deleted from the Environmental Quality Account. Sediment concentrations have a direct effect on water quality, fish habitat, esthetic values, etc. which are natural environmental considerations.

Comment: The Draft Environmental Impact Statment conforms adequately with the analytic and administrative requirements of Section 102(2)(C), National Environmental Policy Act of 1969.

Response: Noted

Texas Water Development Board

Comment:

The Board stated that its comments were addressed previously to the construction of six floodwater retarding structures, channel clearing of Sandy Creek through the city of Jasper, construction of a new sewage treatment plant, and the provision for two sanitary land fills. The Board further stated that it is aware of the social and economic damages that are associated with frequent flooding in the region. The Board believes that more desirable living conditions could be provided if runoff could be more effectively controlled, and that adequate treatment facilities and regulated land fills will enhance water quality and decrease any potential health hazard.

Response:

The project plan for the watershed does not include the referenced sewage treatment plant and sanitary land fills. These measures were included in Part III (Abbreviated Environmental Quality Plan) of the Addendum. The Soil Conservation Service has recognized that the purpose of the Addendum and its relationship to the proposed project plan

was not explained adequately in the Draft Work Plan. Accordingly, an introduction has been added to the three part Addendum and also sets forth the formulation of the "Abbreviated Environmental Quality Plan."

Comment:

The Board stated that it has no objections to the Draft Watershed Work Plan, or the Draft Environmental Impact Statement as presented.

Response: Noted

Texas Water Quality Board

Comment:

The Board reviewed the Draft Environmental Impact Statement and also the Draft Watershed Work Plan for the Sandy Creek Watershed in Jasper County and concurred with the Draft Environmental Impact Statement that the project should improve water quality conditions in this watershed. It noted that water quality conditions should be improved after the project is implemented since provisions have been made for the protection against erosion and water pollution both during and after construction. It also noted that needed waste disposal facilities will be in conformance with federal, state, and local regulations.

Response: Noted

Texas Air Control Board

Comment:

The Board stated that any open burning must be conducted in compliance with Regulation I, Rule 101.25 of the Texas Air Control Board.

Response: Noted

Texas Forest Service

Comment:

The Texas Forest Service stated that outside of some minor editorial changes, e.g., page 10, paragraph 5, Work Plan Draft, Land Management - 12 to 15 years is required for pine seedlings to reach a marketable size, not "twenty to thirty" years as stated, both the Draft Work Plan and Draft Environmental Impact Statement are acceptable.

Response: The changes were made as suggested.

Sandy Creek Watershed, Texas

Texas Department of Agriculture

Comment: The Department stated that the proposed project appears to have

merit and does not pose any undue environmental impact.

Response: Noted

The University of Texas at Austin, Bureau of Economic Geology

Comment: The Bureau stated that it could not foresee any significant

adverse environmental effects associated with the project.

Response: Noted

Texas Parks and Wildlife Department

Comment: The Department stated that it had no additional suggestions in

regard to the Draft Work Plan and Draft Environmental Impact

Statement.

Response: Noted

The National Audubon Society

Comment: The National Audubon Society stated that when residential and

commercial development are created within the flood plain, those residing or doing business in the area should know the risk of flood damage. The Society believes that the Water Quality Council suggested regulations and assurance along

these lines.

Response: The Soil Conservation Service is in full accord with the referenced comment. A provision in the Watershed Work Plan

addresses this matter. As stated in both the Draft Watershed Work Plan and the Draft Environmental Impact Statement, Public Law 566 funds for installation of the planned structural

measures will not be provided until the city of Jasper institutes a form of flood plain zoning that will preclude future construction in the designated floodway area and that will regulate any development between the 100-year with

project flood elevation and the designated floodway.

Comment: The National Audubon Society stated, "It is our belief at this point that what you are trying to do is to remedy a

situation on a flood plain that cannot really be remedied

unless you destroy the natural stream structure."

Sandy Creek Watershed, Texas

Response: The Soil Conservation Service disagrees that the channel characteristics of Sandy Creek, as they now exist, are natural. The existing channel characteristics are the result of extensive channel filling from accelerated sediment deposited which resulted from past logging operations and man's misuse of the land resources within the watershed. The channel has also been altered by past removal of accumulated sediment.

The project was formulated to reduce the existing flood problem on the flood plain without altering the stream characteristics in significant or measurable way. The work plan is explicit to the fact that there will be no excavation or other work within the channel area except for the removal of fallen trees or logs which have lodged in the channel and which are causing bank erosion and excessive channel bedload accumulations.

Comment: The Society stated, "Our chapter observes that 'most of the developments that would be protected are within one hundred (100) feet of the creek bed or where there once was a creek bog'."

Response: The observation is not correct. The flood plain of a 100-year frequency flood event is generally from 1,000 feet to 1,800 feet wide throughout the urban area of Jasper. The urban flood plain is shown to scale on Appendix C of the Environmental Impact Statement.

Comment: The Society stated, "The chapter also observed that the spending of public money is not of the most importance. What we are trying to do and what I hope the Soil Conservation Service will concur in, is to protect the natural stream structure. In other words, lets quit trying to be plumbers and work a little bit with natural streambeds."

Response: See response to the second proceeding comment.

Comment: The Society stated, "If you want to straighten the stream, this will affect the surrounding watersheds, extricate water, and at the same time create siltation and unnecessary runoff. I believe that one of the major purposes of the Soil Conservation Service is to preserve soil."

Response: As pointed out in response to previous comment, the stream will not be straightened or excavated. The channel of Sandy Creek will not be modified.

Comment: The Society stated that Mr. Marvin E. Howe of the Sabine Audubon Society Chapter quoted as follows: "I visited a week some of the people in the most flood prone area involved.

Sandy Creek Watershed, Texas

One of these people asked me 'why do this project?'. They admit that twice in recent years they have had water in their place of business. The water has caused damage but it was not serious enough for them to relocate elsewhere."

Response:

It is evident that the statement of the local person quoted did not express the views of the majority of the people who have been,or who are potentially, affected by flooding from Sandy Creek. The application for assistance under the provisions of Public Law 566 was submitted to the Soil Conservation Service by the City of Jasper, the Upper Jasper County Water Authority, and the Jasper-Newton Soil and Water Conservation District, in response to public interest in solving the flood problems in the Sandy Creek Watershed.

LIST OF APPENDIXES

Appendix A - Comparison of Benefits and Costs for Structural Measures

Appendix B - Letters of Comment Recieved on the Draft Environmental Impact Statement

10701

Appendix C - Urban Flood Plain

Appendix D - Project Map

Edward E. Thomas

State Conservationist

Date OCT 3 1 1975

APPENDIX A

COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES

Sandy Creek Watershed, Texas

(Dollars)

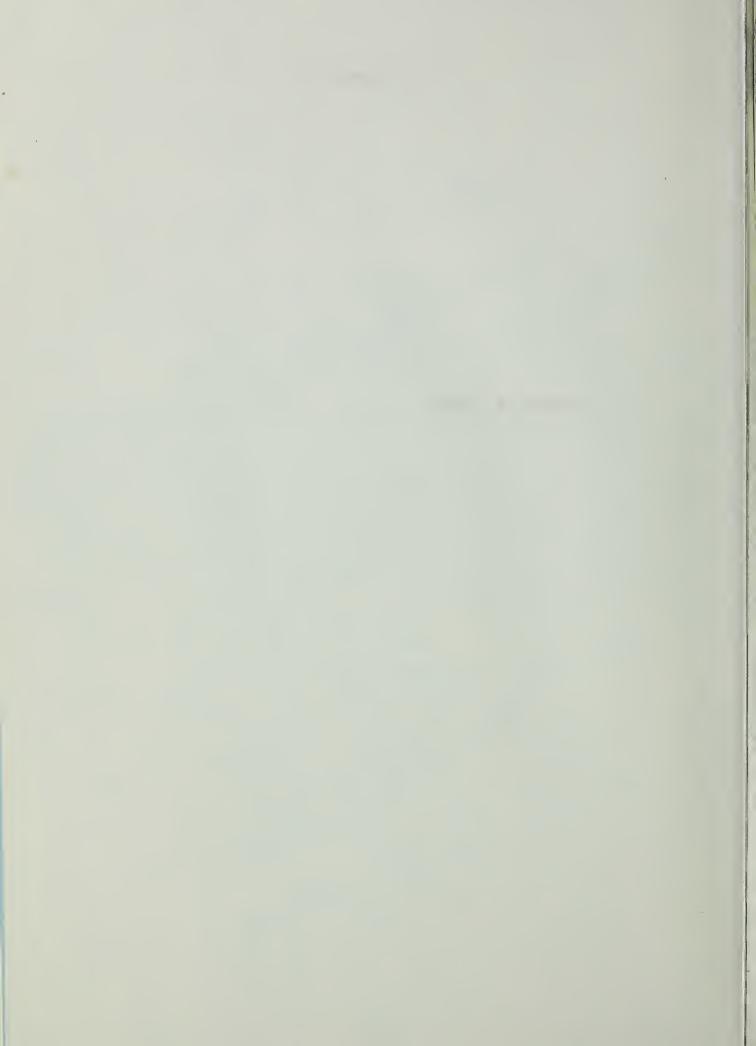
	: AVERAGE AND BENEFITS: Damage:	5 1/		: Cost	: Benefit : Cost
Evaluation Unit	:Reduction:Se	econdary	: Total	: 2/	Ratio
Floodwater Retarding Structure Numbers 1 through 6 and Floodway	100,940	8,380	109,320	51,390	2.1:1.0
Project Administration	1			6 ,9 80	
GRAND TOŢAL	100,940 <u>3</u> /	8,380	109,320	58,370	1.9:1.0
1/ Price Base: Auricultural henefits current normalized prices:					

- 1/ Price Base: Agricultural benefits current normalized prices; other benefits 1974.
- 2/ Installation: 1974 prices amortized for 100-years at 5.875 percent interest; 0&M current prices (1974).
- In addition, it is estimated that land treatment measures will provide flood damage reduction benefits of \$6,570 annually.

September 1975



LETTERS OF COMMENT





DEPARTMENT OF THE ARMY OFFICE OF THE ASSISTANT SECRETARY

WASHINGTON, D.C. 20310

9 JUN 1975

Honorable Robert W. Long Assistant Secretary of Agriculture Washington, D. C. 20250

Dear Mr. Long:

In compliance with the provisions of Section 5 of Public Law 566, 83d Congress, the views of the Secretary of the Army were requested for the Watershed Work Plan and Draft Environmental Impact Statement for Sandy Creek Watershed, Jasper County, Texas.

We have reviewed the work plan and foresee no conflict with any projects or current proposals of this Department.

The draft environmental impact statement is considered to be satisfactory.

Charles b. Ford

Deputy A sistant Secretary of the Army (Civil Works)

Charles R. Farl



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE REGIONAL OFFICE

1114 COMMERCE STREET DALLAS, TEXAS 75202

OFFICE OF
THE REGIONAL DIRECTOR

Our Reference: EI# 1275-527

Edward E. Thomas State Conservationist Soil Conservation Service Department of Agriculture P. O. Box 648 Temple, Texas 76501

RE: Sandy Creek Watershed

Dear Mr. Thomas:

Pursuant to your request, we have reviewed the Environmental Impact Statement for the above project proposal in accordance with Section 102(2) (c) of P. L. 91-190, and the Council on Environmental Quality Guidelines of April 23, 1971.

Environmental health program responsibilities and standards of the Department of Health, Education, and Welfare include those vested with the United States Public Health Service and the Facilities Engineering and Construction Agency. The U.S. Public Health Service has those programs of the Federal Food and Drug Administration, which include the National Institute of Occupational Safety and Health and the Bureau of Community Environmental Management (housing, injury control, recreational health and insect and rodent control).

Accordingly, our review of the Draft Environmental Statement for the project discerns no adverse effects—that might be of significance where our program responsibilities and standards pertain, provided that appropriate guides are followed in concert with State, County, and local environmental laws and regulations.

We therefore have no objection to the authorization of this project insofar as our interests and responsibilities are concerned.

Very truly yours,

William F. Crawford

Environmental Impact Coordinator

cc: Charles Custard
Warren Muir



United States Department of the Interior

OFFICE OF THE SECRETARY SOUTHWEST REGION

Room 4030, 517 Gold Avenue SW. Albuquerque, New Mexico 87101

June 3, 1975

ER-75/349

Mr. Edward E. Thomas, State Conservationist Soil Conservation Service U.S. Department of Agriculture P.O. Box 648 Temple, Texas 76501

Dear Mr. Thomas:

This responds to your letter of March 31, 1975, addressed to the Director, Office of Environmental Project Review, requesting our comments on your Draft Watershed Work Plan and Draft Environmental Impact Statement for Sandy Creek Watershed, Jasper County, Texas.

The Department of the Interior has reviewed the subject draft reports and offers the following comments:

WORK PLAN

The Work Plan is a commendable effort to reduce or minimize fish and wildlife habitat losses, particularly by revegetating with multipleuse plants and planting woody and seed-bearing vegetation on idle lands, fence rows, and around stock ponds to provide food and cover for wildlife. The proposed floodway is more esthetic, and much less damaging to fish and wildlife resources than channelization. However, the Work Plan does not indicate the adverse effects on fishery resources of removing fallen trees and logs from the stream, which contribute to the diversity of the stream habitat and provide sheltered areas for food organisms as well as protection and resting areas for fish.

The components of the environmental quality objective reflect economic development, regional development, and social well-being components which should appear in their respective plans or accounts. An example would be using flood control as a component of the environmental objective. To stop the flooding of a floodplain would contribute to the destruction of the very environment that should be conserved under the environmental quality plan. The natural floodplain ecosystem



exists because of and not in spite of periodic flooding. According to the Principles and Standards for Planning Water and Related Land Resources, Federal Register, Vol. 38, No. 174, page 33, "... the environmental objective reflects man's abiding concern with the quality of the natural physical-biological system in which all of life is sustained." Man-made dams are not "natural."

Some examples of this appearing in the report are as follows:

Page A-7, No. A-1. "Project output will make available regional funds and resources that can be used to enhance the physical appearance of 15 agricultural units on 685 acres of agricultural floodplain and 30 businesses and 40 residential properties on 410 acres of urban floodplain."

Page A-11, No. 5. "Creating additional habitat for fish." Instead of creating new habitat, it is substitute habitat resulting from destruction of the existing stream habitat.

The summary of environmental effects resulting from the installation of the environmental plan lists several similar statements. Examples are page A-7, Nos. A-2, B-1, B-2, B-3, D-2; page A-8, second paragraph; page A-9, second paragraph; page A-10, Nos. 2-f and 2-g; page A-11, No. 3; page A-14; No. 1-a; and page A-15, Nos. 2-e and 2-f.

We recommend that the Environmental Quality Plan only contain objectives concerned with the quality of the "natural environment" as stated by the Principles and Standards for Planning Water and Related Land Resources.

Page 2, paragraph 6. We believe there should be a clear distinction between the reduction of average annual damages (\$107,510) and the average annual damage reduction benefits (\$100,940). The headings and figures of Table 5 and 6 do not clarify the meanings.

Page 4, paragraph 6. We believe the elevations should be rechecked.

Page 6. "Forestry and related wood using industries comprise the primary economic base within the watershed." Both the Work Plan and the Environmental Impact Statement (page 27) indicate that timber production is the major industry within the watershed. However, on page 64 of the Work Plan, it is stated that "No production in the sediment pools was considered and the land covered by the detention pool was assumed to be forestland under project conditions. The annual value of the loss of net income from these areas was less than the amortized value of the land; therefore, the easement value was used in economic justification." We believe the value of forgone production should be considered in assessing project costs. would include an evaluation of the extant and three successive timber crops which will be forgone if the project is constructed. It is not clear if the value of this timber production and forgone pasture have been considered in the computation of project costs. This could be clarified in the Work Plan.

Page 19, item 1, and page 43, last paragraph. Both of these sections include differing percentages as to the amount of present land treatment measures established and those to be completed by the end of the project installation period. These differences should be resolved.

We believe it would be helpful to add a note as to why a 25 percent reduction in area flooded results in a 99 percent reduction in flood damages.

ENVIRONMENTAL IMPACT STATEMENT

The draft environmental statement is essentially a reorganized word-for-word duplication of the Work Plan. The reports are sometimes redundant. For example, the discussion of environmental impacts of the proposed project is contained on pages 35 through 39 of the environmental statement and is followed by a listing of these impacts on pages 39 and 40. Even within the listing there is redundancy because statements 5, 6, 8, and 19 are merely restatements of the basic project objectives. Statements 9, 10, and 11 declare the same beneficial impact three different ways. We suggest an editing of these sections to eliminate unnecessary duplication.

A number of alternatives are briefly described. Since exact figures of their costs are given, it appears that they were studied in considerable detail. However, there is very little or no assessment of desirable and undesirable features of the alternatives which would lead to a reasoned choice of the project as proposed. It is also noted that while cost figures of those alternatives not chosen are easy to find in the statement, comparable cost figures for the proposed project are difficult to find.

The Draft Environmental Impact Statement presents an adequate analysis of the project impact on wildlife. However, the impact statement does not indicate the adverse effects on fishery resources of removing fallen trees and logs from the stream, which contribute to the diversity of the stream habitat and provide sheltered areas for food organisms as well as protection and resting areas for fish.

<u>Page 1, item 1.</u> We suggest correlating the percentages with those given on page 4, paragraph 3.

Page 8. The emergency spillways for the flood control structures are not described but are said to be "excavated in materials having a high potential for erosion." Since there is no indication that a lining would be provided, it must be questioned whether erosion of the spillways during an extremely severe flood could lead to a washout breaching the dam. The probability of a flood reaching the emergency spillways is given as 0.25 percent in any year for each of the structures and thus is very low. Nevertheless, over the proposed 100-year life of the project, even this low probability becomes significant. Therefore, the performance of the spillways when needed should be further described.

It is noted that flood-free protection will be provided from a 100-year event for all existing urban improvements except one house. However, floods greater than a 100-year event can occur. The effects of such floods on the urban flood-prone area that might otherwise be thought of as free from floods should be described in the statement.

Page 23. It is stated that ground water is the source of supply for the community of Jasper as well as for rural, domestic, and livestock use. Yet, in neither the statement nor the Work Plan have the impacts on ground water either of flooding or of the proposed project been considered. In addition, swamping caused by sediment accumulation, consequent rise of water table, and increase in probability of flooding are mentioned in the statement (p. 31) for the area of the Jasper city sewage plant. The statement should address the impacts of this situation and of the project effects on it.

Page 32, paragraph 3. We do not follow the calculations of 4.3 acrefeet of sediment deposited to 65 percent reduction of sediment deposited as amounting to 3.8 acrefeet, the figure shown on page 33, paragraph 5. This difference should be clarified.

Page 34, Tables. We believe it should be made clear that the average annual area inundated consists of a sum of more than one flood. Likewise, it should be noted that the area inundated by selected recurrence intervals is for a single storm in each area.

Page 36. "The installation of the six floodwater retarding structures and floodway will require the commitment of 636 acres of land to project purposes. Of this acreage, 516 acres are forestlands...." Page 29 of the Work Plan states "Installation of the floodwater retarding structures will require 528 acres of land which includes 516 acres of forestland...." These apparently contradictory statements do agree that 516 acres of forestland will be committed to the proposed project.

The opportunity to review the Draft Work Plan and Draft Environmental Impact Statement is appreciated.

Sincerely,

Willard Lewis

Special Assistant to the Secretary

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VI 1600 PATTERSON DALLAS, TEXAS 75201 May 22, 1975

Mr. Edward E. Thomas State Conservationist Soil Conservation Service P. O. Box 648 Temple, Texas 76501

Dear Mr. Thomas:

We have reviewed the Draft Environmental Impact Statement, Sandy Creek Watershed Project, Jasper County, Texas. The proposed project provides for watershed protection and flood prevention through the implementation of various land treatment practices and structural measures. The structural measures proposed include the construction of six floodwater retarding structures and 2.9 miles of modified floodway in the Sandy Creek watershed.

We are classifying your Draft Environmental Impact Statement as LO-1. Specifically, we have no objections to the proposed plan described in the statement at this time. Also, we believe that your agency has presented an adequate discussion of the impacts of the project and the available alternatives. The classification and the date of our comments will be published in the <u>Federal Register</u> in accordance with our responsibility to inform the public of our views on proposed Federal actions, under Section 309 of the Clean Air Act.

Definitions of the categories are provided on the attachment. Our procedure is to categorize our comments on both the environmental consequences of the proposed action and on the adequacy of the impact statement at the draft stage, whenever possible.

We appreciate the opportunity to review the Draft Environmental Impact Statement. Please send us two copies of the Final Environmental Impact Statement at the same time it is sent to the Statement at the same time it is sent to the Statement and Environmental Quality.

Sincerely yours,

for Regional Administrator

Enclosure

ENVIRONMENTAL IMPACT OF THE ACTION

10 - Lack of Objections

EPA has no objections to the proposed action as described in the draft impact statement; or suggests only minor changes in the proposed action.

ER - Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to re-assess these aspects.

EU - Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

ADEQUACY OF THE IMPACT STATEMENT

Category 1 - Adequate

The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2 - Insufficient Information

EPA believes the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

Category 3 - Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement. If a draft statement is assigned a Category 3, no rating will be made of the project or action, since a basis does not generally exist on which to make such a determination.



DEPARTMENT OF TRANSPORTATION UNITED STATES COAST GUARD

MAILING ADDRESS: U.S. COAST GUARD(G-WS/73) 400 SEVENTH STREET SW: WASHINGTON, D.C. 20590 PHONE: (202) 426-2262

• 3 0 MAY 1975

Mr. Edward E. Thomas State Conservationist Soil Conservation Service P. O. Box 648 Temple, Texas 76501

Dear Mr. Thomas:

This is in response to your letter of 31 March 1975 addressed to Commandant, Coast Guard concerning a draft environmental impact statement for the Sandy Creek Watershed, Jasper County, Texas.

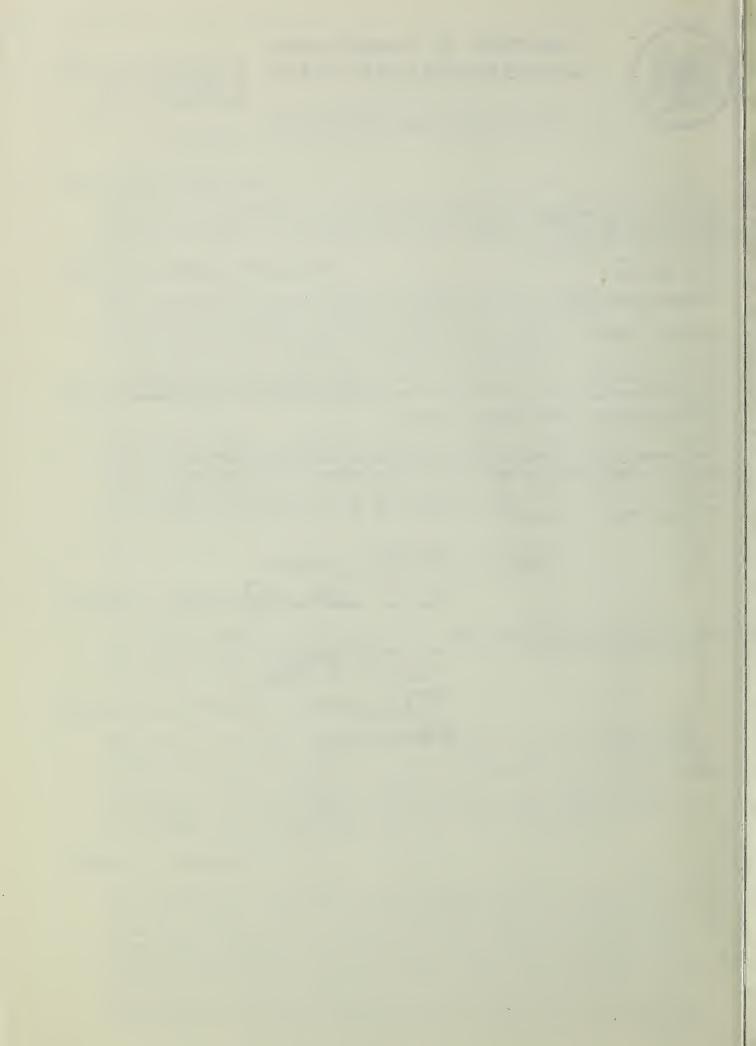
The Department of Transportation has reviewed the material submitted. We have no comments to offer nor do we have any objection to this project.

The opportunity to review this draft statement is appreciated.

Sincerely,

Www. 3.W

Captain, and of Guard
Deputy Chic
Environmen.
By direction of the



Advisory Council
On Historic Preservation
15 M. Street N.W. Suite 430
Washington D.C. 20005

Mr. Edward E. Thomas
State Conservationist
Soil Conservation Service
U.S. Department of Agriculture
P. O. Box 648
Temple, Texas 76501

APR 2 1 1975

Dear Mr. Thomas:

This is in response to your request of March 31, 1975 for comments on the draft environmental statement (DES) and watershed work plan (WWP) for the Sandy Creek Watershed, Jasper County, Texas. Pursuant to its responsibilities under Section 102(2)(C) of the National Environmental Policy Act of 1969, the Advisory Council has determined your DES and WWP appear adequate regarding our area of expertise and we have no further comment to make on the undertaking at this time.

However, the Council would like to call your attention to what it believes are confusing statements in the documents concerning demonstration of compliance with Section 106 of the National Historic Preservation Act of 1966 and the provisions of Executive Order 11593 "Protection and Enhancement of the Cultural Environment" of May 13, 1971 in accordance with the "Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R. Part 800).

Reference is made to sections in the DES and WWP which indicate no properties included in or eligible for inclusion in the National Register of Historic Places will be affected by the project, while other statements indicate no properties included in or eligible for inclusion in the National Register will be adversely affected by the undertaking. Apparently the Soil Conservation Service (SCS) is unaware of the distinction made by the procedures between "no effect" and "no adverse effect." Pursuant to Section 106 and Executive Order 11593, if an undertaking results in an effect, beneficial or adverse, the Federal agency is required to afford the Council an opportunity to comment on the undertaking.

For your information, staff from the Council's Denver office have discussed this matter with your staff via telephone on April 10. From that conversation, we understand SCS is required under its National Environmental Policy Act guidelines to qualify positive statements made in its environmental documents and that an unqualified no effect statement is not adequate. Therefore, it is suggested that in the future, SCS qualify its statements

of no effect on cultural resources by indicating that such determinations were made in accordance with Section 800.4(b) of the procedures, thereby removing further doubt raised by its qualifying statements concerning the nature of effect.

Should you have questions or desire to discuss this matter further, please contact Michael H. Bureman of the Council staff at (303) 234-4946.

Sincerely yours,

John D. McDermott

Director, Office of Review

and Compliance



OFFICE OF THE GOVERNOR DIVISION OF PLANNING COORDINATION JAMES M, ROSE

June 9, 1975 the state of the s

Mr. Edward E. Thomas State Conservationist Soil Conservation Service U.S. Department of Agriculture P. O. Box 648 Temple, Texas 76501

Dear Mr. Thomas:

RNOR

The watershed work plan (WWP) and the draft environmental impact statement (EIS) for the Sandy Creek Watershed, Texas has been reviewed by the Governor's Division of Planning Coordination and by interested State agencies as required by the National Environmental Policy Act of 1969.

The review participants generally supported the project proposals and submitted the following suggestions to strengthen the cited document:

- The Texas Water Rights Commission (TWRC) requested that they be advised of action taken by the Soil Conservation Service on comments previously submitted on this project. The TWRC stated that the entire, integrated project should have been considered in the analysis provided in the addendum. The TWRC noted that the actual acre foot reduction in sedimentation provided substantially greater annual benefit than indicated in the DES. They suggested that this improvement should be quantified and shown in the Regional Development Account rather than the Environmental Quality Account of the Addendum.
- The Texas Water Development Board (TWDB) noted the advantages 2. of the project proposals which will effectively reduce the threat of flood damage in the area.
- The Texas Water Quality Board noted that the project proposals 3. should improve water quality conditions in the watershed area.
- 4. The Texas Air Control Board commented that any open air burning must be done as prescribed in their regulations.

5. The Texas Forest Service stated that the plan and environmental impact statement are acceptable to them but noted some minor changes in editorial content.

The Texas Department of Agriculture, the Texas Highway Department, the Bureau of Economic Geology and the Texas Parks and Wildlife Department also participated in this review. The comments of the review participants are enclosed for your information and further planning for this project. If we can be of further assistance, please let us know.

Sincerely,

JAMES M. ROSE

Director

JMR/tw Enclosures

cc: Mr. Joe D. Carter, Texas Water Rights Commission

Mr. Harry P. Burleigh, Texas Water Development Board

Mr. Hugh C. Yantis, Jr., Texas Water Quality Board Mr. Charles R. Barden, Texas Air Control Board

Mr. Mason Cloud, Texas Forest Service

TEXAS WATER RIGHTS COMMISSION

STEPHEN F. AUSTIN STATE OFFICE BUILDING

OMMISSIONERS

CARTER, CHAIRMAN 2453

May 21, 1975

Y B. HARDEMAN

E HOLMAN 2451

AUDREY STRANDTMAN SECRETARY 475 4514

Brigadier General James M. Rose Director, Division of Planning Coordination Office of the Governor P. O. Box 12428, Capitol Station Austin, Texas 78711

Attention: Mr. Wayne N. Brown

Re: U.S. Department of Agriculture, Soil Conservation Service -

- Draft Watershed Work Plan (DWWP)(March 1975); and
- Draft Environmental Impact B. Statement (DEIS)(March 1975) for Watershed Protection and Flood Prevention, Sandy Creek Watershed. Jasper County, Texas.

Dear General Rose:

By letter of April 11, your staff requested comments on the referenced documents, pursuant to the clearinghouse review requirements of Office of Management and Budget Circular No. A-95.

The following comments are furnished:

By letter of December 17, 1974, the Commission staff 1. submitted detailed review comments on the November 1974 drafts of the DWWP and DEIS. The Commission staff's December 17, 1974, comments were transmitted by the Director, Governor's Division of Planning Coordination to the State Conservationist, by letter of January 20, 1975. The extent to which the Commission's earlier comments were considered by the Soil Conservation Service is not readily apparent in the March 1975

General James M. Rose May 21, 1975 Page 2

versions of the DWWP and the DEIS. Therefore, the staff asserts that the earlier comments still are considered valid, and suggests that the Soil Conservation Service advise the staff of the action taken on earlier review comments in the interest of attaining better communication and continuity in interagency coordination. Unless this mutual interchange is maintained, the practice of periodic reviews is of doubtful value insofar as effective, continuing planning efforts are concerned.

2. It is believed that the abbreviated analysis based on the 1973 Water Resources Council's Principles and Standards for Planning Water and Related Land Resources (38 FR 24778, September 10, 1973) enhances the justification of the structural component of the project. Some explanation would be desirable on why the abbreviated analysis in the Addendum was limited essentially to the structural component (i.e., six floodwater retarding structures, and a 2.9-mile floodway); and, why land treatment and other nonstructural elements of the project were excluded from the analysis outlined in the Addendum.

The staff believes that the integrated project should be considered. In this regard, attention is invited to the following from a report by Mr. Joseph W. Haas, of the Soil Conservation Service. 1/

"Watershed projects are not single structure or reservoir proposals. Rather they consist of a variety of measures to be installed within a project area. The first increment considered is always 'land treatment,' the application of

Joseph W. Haas, "Small Watershed Program: Its Status and Effects," Man-Made Lakes: Their Problems and Environmental Effects, Geophysical Monograph 17, William C. Ackermann, et al., Eds., American Geophysical Union, Washington, D.C., 1973, pp 743-745.

General James M. Rose May 21, 1975 Page 3

conservation practices on cropland or other areas.... In combination with land treatment, various structural works of improvement are analyzed,... Generally, the reduction of flood damage is of primary importance.... Channel improvement is sometimes needed where enough floodwater storage is not available or dams are not feasible.... Thus a single watershed project may include several man-made lakes and many other measures to create a development responsive to the stated needs and conducive to environmental protection." (Emphasis added; page 744.)

- 3. It is believes that a 65 percent reduction of sedimentation in B.A. Steinhagen Lake from the present, estimated 4.3 acre-feet annually (see DEIS, page 32) to about 0.5 acre-feet annually (i.e., an average annual reduction of 3.8 acre-feet; see DEIS page 33) represents a greater average annual benefit than implied on page 32, DEIS. Also, the improvement should be quantified and shown in the Regional Development Account rather than the Environmental Quality Account of Addendum.
- 4. The DEIS conforms adequately with the analytic and administrative requirements of Section 102(2)(C), National Environmental Policy Act of 1969.

The foregoing comments are furnished with constructive intent to enhance the scope and justification of the P.L. 566 project detailed in the referenced documents.

Sincerely yours,

TEXAS WATER RIGHTS COMMISSION

AJD:11

By: Alfred J. D'Arezzo, Ph.D., (C.E.)

Special Analyst for Environment and Interagency Coordination

TEXAS WATER DEVELOPMENT BOARD

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P.O. BOX 13087 CAPITOL STATION AUSTIN, TEXAS 78711

May 15, 1975

HARRY P. BURLEIGH EXECUTIVE DIRECTOR

AREA CODE 512
475-3571
1700 NORTH CONGRESS AVENUE

IN REPLY REFER 10

General James M. Rose, Director Division of Planning Coordination Office of the Governor P.O. Box 12428, Capitol Station Austin, Texas 78711

Dear Jim:

Please refer to your memorandum dated April 11, 1975 which transmitted for review and comment the Soil Conservation Service's "Work Plan and Draft Environmental Statement: Sandy Creek Watershed Project, Jasper County, Texas."

Work proposed to be accomplished in the Sandy Creek Watershed will be sponsored jointly by:

Jasper-Newton Soil and Water Conservation District Upper Jasper County Water Authority City of Jasper, Texas Soil Conservation Service, U.S.D.A.

Sandy Creek comprises an area of 39.06 square miles, and has a flood-plain area of 1,095 acres of which a substantial portion lies within the City of Jasper.

Although various types of land treatment, clearing, and re-vegetation processes are proposed, our comments will address primarily the construction of 6 floodwater retarding structures, channel clearing of Sandy Creek through the City of Jasper, construction of a new sewage treatment plant, and the provision of 2 sanitary land fills. Total installation costs are: retarding structures and channel work, \$901,180; sewage treatment plant, \$2,500,000; and sanitary land fills, \$90,000. Other measures proposed will bring the total installation cost of the environmental quality plan to \$4,127,000. The report shows that annual benefits in the amount of \$109,320 will be realized from a total annual cost of \$58,300, or a benefit-cost ratio of 1.9.

General James M. Rose, Director May 15, 1975 Page 2

We are aware of the social and economic damages that are associated with frequent flooding in this region. Sandy Creek is within a high rainfall area where drainage from naturally flat terrain is further impeded by dense vegetation. More desirable living conditions could be provided if runoff could be more effectively controlled. This can be at least partially accomplished by constructing flood control reservoirs and increasing the carrying capacity of stream channels and drainage facilities. Adequate sewage treatment facilities and regulated land fills will enhance water quality and decrease any potential health hazards.

TERMS WELLER DRIVERSON OF PRIMITION

This agency offers no objections to the Watershed Work Plan, Sandy Creek Watershed, Jasper County, Texas or the Environmental Impact Statement as presented.

Sincerely,

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Harry P. Burleigh

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TEXAS

PARKS AND WILDLIFE DEPARTMENT

SIONERS

JOHNSON nan, Austin

ULTON Chairman, Lubbock

STONE



CLAYTON T. GARRISON EXECUTIVE DIRECTOR

JOHN H. REAGAN BUILDING AUSTIN, TEXAS 78701

COMMISSIONERS

BOB BURLESON Temple

JOHN M. GREEN Beaumont

LOUIS H. STUMBERG San Antonio

- May 15, 1975

Mr. Wayne N. Brown State Planning and Development Office of the Governor P.O. Box 12428, Capitol Station Austin, Texas 78711

Dear Mr. Brown:

This Department has reviewed the Soil Conservation Service work plan and draft environmental statement on Sandy Creek Watershed Project, Jasper County, Texas.

We offer no additional suggestions to the statements presented in these documents.

Thank you for the opportunity to comment on this project.

Sincefely

CLAYTON T. GARRISON Executive Director

CTG:WJS:Ac



THE UNIVERSITY OF TEXAS AT AUSTIN BUREAU OF ECONOMIC GEOLOGY AUSTIN, TEXAS 78712

University Station, Box X Phone 512-471-1534 April 17, 1975

Mr. Wayne N. Brown, Chief Division of Planning Coordination P. O. Box 12428 Austin, Texas 78711

Dear Mr. Brown:

The staff of the Bureau of Economic Geology has reviewed the Work Plans and Draft Environmental Impact Statements for:

- (1) Elm Creek (Cen-Tex) Watershed, Texas
- (2) Pollard Creek Watershed, Palo Pinto County, Texas

(3) Sandy Creek Watershed, Jasper County, Texas

We foresee no significant adverse environmental effects associated with these projects.

Thank you for the opportunity to respond.

Sincerely

. L. Fisher

Director

WLF:wll

TEXAS FOREST SERVICE



File P5. 321223

College Station, Texas 77843 May 27, 1975

Mr. Leon Willhite Executive Department Division of Planning Coordination P. O. Box 12428, Capitol Station Austin, Texas 78711

Dear Leon:

I have your letter of April 11th, with attachments, concerning the Sandy Creek Watershed Project, Jasper County, Texas.

Outside of some minor changes in editorial content, e.g., page 10, paragraph 5 Work Plan Draft, Land Management - 12 to 15 years is required for pine seedlings to reach a marketable size, not "twenty to thirty years" as stated, both Plan and Environmental Impact Statement Drafts are acceptable to us.

Sincerely,

Mason C. Cloud

Head, Forest Environment Dept.

Epson C. Claud

MC/jc

cc: Southeastern Area, USFS, Atlanta & Jackson

TEXAS WATER QUALITY BOARD

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PH. (512) 475-2651

1700 NORTH CONGRESS AVE. 78701 P.O. BOX 13246 CAPITOL STATION 78711 AUSTIN, TEXAS

April 18, 1975

Re: Draft Environmental Impact
Statement - Sandy Creek Watershed Project in Jasper County

General James M. Rose, Director Division of Planning Coordination Office of the Governor " P. O. Box 12428, Cap. Sta. Austin, Texas 78711

Dear General Rose:

The staff of the Texas Water Quality Board has reviewed the draft environmental impact statement and also the draft watershed work plan for the Sandy Creek watershed in Jasper County and concurs with the draft impact statement that the project should improve water quality conditions in this watershed. We have noted that water quality conditions should be improved after the project is implemented since provisions have been made for the protection against erosion and water pollution both during and after construction. We have also noted that needed waste disposal facilities will be in conformance with federal, state and local regulations.

We appreciate the opportunity to review this project. If we can be of further assistance, please let us know.

Sincerely,

Emory G. Long, Director

Administrative Operations Division

cc: Soil Conservation Service, Temple, Texas
TWOB District 6



TEXAS AIR CONTROL BOARD

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JOE C. BRIDGEFARMER, P.E.

April 18, 1975

Mr. Wayne N. Brown, Chief State Planning and Development Office of the Governor Division of Planning Coordination P. O. Box 12428, Capitol Station Austin, Texas 78711

Dear Mr. Brown:

Our agency has reviewed the Work Plan and Draft Environmental Impact Statement for Sandy Creek Watershed Project, Jasper County. Any open burning must be conducted in compliance with Regulation I, Rule 101.25 of the Texas Air Control Board.

Thank you for the review opportunity. If we can be of further assistance, please contact me.

Sincerely yours,

Bill Stewart, P.E.

Director

Control and Prevention

cc: Mr. Howard Baker, Regional Supervisor, Beaumont



EDMUND L. NICHOLS Assistant Commissioner

April 15, 1975

Mr. Wayne N. Brown State Planning and Development Division of Planning Coordination Office of the Governor Austin, Texas 78711

Dear Wayne:

This is a response to your letter of April 11, 1975, asking our review of and comments on the Work Plan and Draft Environmental Impact Statement: Sandy Creek Watershed Project, Jasper County, Texas.

We have reviewed these documents. The proposed project appears to have merit and does not pose any undue environmental impact.

We appreciate the opportunity to study this proposed project.

Edmund L. Nichols

Sincere]

eln/db



DEEP EAST TEXAS COUNCIL OF GOVERNMENTS ECONOMIC DEVELOPMENT DISTRICT

272 East Lamar Street • Jasper • Texas • 75951

Phone • Area Code 713 • 384-5704

May 1, 1975

FIELD OPERATIONS DWL Court Classes imployee Assistance Program 24.4 North Pecan No. 107 Nacogdoches Texas 75961 (713) 569-0492 Mr. Edward E. Thomas, State Conservationist United States Department of Agriculture Soil Conservation Service P. O. Box 648 Temple, Texas 76501

Dear Mr. Thomas:

CETA PROGRAM 222 South Second Street Lufkin, Texas 75901 (713) 634 2247 The Board of Directors of the Deep East Texas Council of Governments, at its annual meeting on Thursday, April 24, 1975, approved the report of the Applications Review Committee Meeting held the same day. Among the projects included in the Applications Review Committee Report was the plan for Sandy Creek Watershed in Jasper County, Texas.

The Applications Review Committee took favorable action in regard to this project and recommended its approval as being consistent with Regional Planning goals and objectives, with no substantive negative environmental consequences foreseen. The project was then approved by the Board of Directors.

If we can be of additional assistance, do not hesitate to contact us.

R.S.V.P City Hail P.O. Box 661 Nacogdoches, Texas 75961 (713) 569 6648

CORRECTIONAL MANPOWER 210 Lufkin Avenue, No. 104 Lufkin, Texas 75901 (713) 634 2098 Sincerely,

David J. Waxman/ Director of Planning

jah

cc: Honorable W. L. Neal, Mayor - City of Jasper

SOUTHWESTERN REGIONAL OFFICE
John L. Franson, Representative
Louisiana
New Mexico
Texas

(Mexico)

NATIONAL AUDUBON SOCIETY

2507 ROGGE LANE, AUSTIN, TEXAS 78723 - PHONE (512) 928-2047

June 4, 1975

Mr. Edward E. Thomas State Conservationist Soil Conservation Service P.O. Box 658 Temple, Texas 76501

Re: SANDY CREEK WATERSHED PROJECT, JASPER COUNTY, TEXAS (USDA-SCS-EIS-WS-(ADM)-75-3(DTX)

Dear Edward:

I am writing to you in regard to your draft Environmental Impact Statement on the Sandy Creek Watershed project which you sent me some time ago. This letter will be our formal comment on the statement and I hope that you will take the time to consider these comments.

I have referred this impact statement to our nearest local chapter in Orange, Texas. This has been reviewed by Marvin E. Howe and others of the Sabine Audubon Society and since I have a great deal of faith in the ability of that chapter, I am taking their judgement on this matter. This is one of the reasons we have chapters.

Mr. Howe and the Sabine chapter observe, and I concur, that when residential and commercial development are created within the flood plain, they should know the risk of flood damage. I believe that the Water Quality Council suggested regulations and assurance along these lines. It is our belief at this point that what you are trying to do is to remedy a situation on a flood plain that cannot really be remedied unless you destroy the natural stream structure.

Our chapter observes that "most of the developments that would be protected are within one hundred (100) feet of the creek bed or where there once was a creek bog". The chapter also observes that the "spending of public money is not of the most importance". What we are trying to do and what I hope the Soil Conservation Service will concur in is to protect natural stream structure. In other words, let's quit trying to be plumbers and work a little bit with natural stream beds.

AMERICANS COMMITTED TO CONSERVATION

Mr. Edward E. Thomas Page Two June 4, 1975

Of course, if you want to straighten the stream, this will affect the surrounding watersheds, extricate water and at the same time create siltation and unnecessary runoff. I believe that one of the major purposes of the Soil Conservation Service is to preserve soil.

Mr. Howe quotes as follows: "I visited with some of the people in the most flood prone area involved. One of these-people asked me, 'Why do this project?'. They admit that twice in the recent years they have had water in their place of business. The water has caused damage but it is not serious enough for them to relocate elsewhere".

Perhaps the disruption of farming and forestry operations in this area when it rains is a "fact of life". There are many acres all over the country so affected. You have a very good and powerful agency and I hope that we can use it in good sense.

John L. Franson

Southwest Regional Representative

cc: Mr. Kenneth Grant

Sabine Audubon Society - Mr. Marvin E. Howe



